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CATALOGUE

OF THE

FISHES

IN THE

BRITISH MUSEUM.

BY

ALBERT GÜNTHER,
M.A., M.D., PH.D., F.Z.S., ETC., ETC

VOLUME FIFTH.

LONDON:
PRINTED BY ORDER OF THE TRUSTEES.
1864.

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CATALOGUE

OF THE

PHYSOSTOMI,

CONTAINING THE FAMILIES

SILURIDÆ, CHARACINIDÆ, HAPLOCHITONIDÆ, STERNOPTYCHIDÆ, SCOPELIDÆ, STOMIATIDÆ,

IN THE

COLLECTION

OF THE

BRITISH MUSEUM.

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PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET

PREFACE.

Dr. Günther observes,—“This volume contains the Siluroid fishes, and those families which, being provided with an adipose fin, were formerly associated with the Salmonoids. Müller proved them to be distinct families, separating the Characinoids and Scopeloids: however, natural as is the former of these families, very heterogeneous forms are included in the latter. The genus *Salanx*, which we shall treat of in the sixth volume, is the type of a distinct family.

“The publication of the present volume has been much delayed in consequence of a thorough re-examination of the large family of Siluroid fishes; the manuscript was finished, when the Trustees of the British Museum acquired the unique collection of Dr. Bleeker's Siluroids, thus rendering necessary a revision of the descriptions and of the systematic arrangement.

“If we compare the number of species known at present with that contained in the corresponding parts of Cuvier and Valenciennes's Histoire Naturelle des Poissons,' we find it nearly doubled, viz.:—

Total number of species in Cuv. & Val.	492
Total number of species in this volume	1005
Species apparently well characterized in Cuv. & Val.	400
Species apparently well characterized in this volume	849

“More than 170 have been added from the Collection of the British Museum, which again has been much enriched by numerous acquisitions, of which the following are the more important:—

“1. The typical specimens of Siluroids described by Dr. P. Bleeker.

“2. The remainder of the typical specimens of Pharyngognaths, described by the same author, and not contained in the fourth volume of this work.

“3. A Collection of the Fishes of the Essequibo River, made by H. Ehrhardt.

"4. A second Collection of Freshwater Fishes from Guatemala, from O. Salvin, Esq.

"5. A Collection of Freshwater Fishes from Nicaragua, presented by Captain Dow, Corr. M. Zool. Soc.

"6. Several smaller Collections from the Upper Nile, made by J. Petherick, Esq.

"7. A Collection of the Freshwater Fishes from Palestine, made by the Rev. H. B. Tristram.

"8. A Collection of Indian Fishes, presented by Captain Mitchell of the Madras Museum.

"9. Further Collections of Fishes from Australia and New Zealand, sent by Mr. G. Krefft.

"10. Numerous small Collections of West-African Freshwater Fishes, received from various sources.

"11. A Collection of Freshwater Fishes from Eastern Tropical Africa, presented by Dr. Kirk and Ch. Livingstone, Esq.

"12. A large Collection of Freshwater and Marine Fishes from Constantinople, made by Dr. Millingen."

JOHN EDWARD GRAY.

British Museum,
Feb. 28, 1864.

ADDITIONS

TO THE

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CATALOGUE

OF

FISHES.

Subclass I. TELEOSTEI.

(*CONTINUED.*)

Order IV. PHYSOSTOMI.

All the fin-rays are articulated; only the first of the dorsal and pectoral fins is sometimes more or less ossified. The ventral fins, if present, are abdominal, without spine. Air-bladder, if present, with a pneumatic duct.

Cfr. Müller, in Abhandl. Berl. Acad. 1844, p. 174.

Fam. 1. SILURIDÆ.

Siluroidei, *Cuv. Règne Anim.*

Skin naked or with osseous scutes, but without scales. Barbels always present; maxillary bone rudimentary, almost always forming the base of a maxillary barbel. Margin of the upper jaw formed by the intermaxillaries only. Suboperculum absent. Air-bladder generally present, communicating with the organ of hearing by means of the auditory ossicles. Adipose fin present or absent.

Inhabitants of the fresh waters of all the temperate and tropical regions, some entering the salt water, but keeping near the coast.

We give first a synopsis of the *Groups*, and then one of the *Genera*.

Synopsis of the Groups.

First Subfamily. SILURIDÆ HOMALOPTERÆ.

The dorsal and anal fins are very long, nearly equal in extent to the corresponding parts of the vertebral column.

Group A. The gill-membranes are not confluent with the skin of the isthmus, remaining separate to the chin. The dorsal is uniformly composed of feeble rays, or its posterior portion is modified into an adipose fin .... **Clariina**, p. 13.

Group B. The gill-membranes are not confluent with the skin of the isthmus, or united with it by a narrow strip only, remaining more or less separate. The dorsal is divided into two portions: a short anterior with a strong spine, and a long posterior which, like the anal, is confluent with the caudal. Ventrals many-rayed .... **Plotosina**, p. 23.

Group C. The gill-membranes are confluent with the skin of the broad isthmus, the gill-openings being thereby reduced in extent. The dorsal and anal are divided into two portions: the anterior of the former fin with a strong spine, whilst the posterior of both fins are united with the caudal. Ventrals six-rayed.
Chacina, p. 29.

Second Subfamily.
SILURIDÆ HETEROPTERÆ.

The rayed dorsal fin is very little developed, and if it is present, it belongs to the abdominal portion of the vertebral column; the adipose fin is exceedingly small or absent. The extent of the anal is not much inferior to that of the caudal vertebral column. The gill-membranes overlap the isthmus, remaining more or less separate.

Group D. Ventral fins below or behind the dorsal. The abdominal portion of the vertebral column is much shorter than the caudal, and the anterior vertebræ are confluent into one of large size.
Silurina, p. 30.

Third Subfamily.

SILURIDÆ ANOMALOPTERÆ.

The rayed dorsal fin is present, but little developed, and belongs to the caudal portion of the vertebral column; adipose fin exceedingly small. The extent of the anal is not much inferior to that of the caudal vertebral column. The gill-membranes overlap the isthmus, remaining separate to the chin.

Group E. Ventral fins in front of the dorsal. The abdominal portion of the vertebral column is much shorter than the caudal, and the anterior vertebræ remain separate. **Hypophthalmina**, p. 66.

Fourth Subfamily.

SILURIDÆ PROTEROPTERÆ.

The rayed dorsal fin is always present, short, with not more than twelve soft rays, and belongs to the abdominal portion of the vertebral column, being placed in advance of the ventrals; the adipose fin is always present and well developed, although frequently short. The extent of the anal is much inferior to that of the caudal vertebral column. The gill-membranes are not confluent with the skin of the isthmus, their posterior margin always remaining free, even if they are united with each other. Whenever the nasal barbel is present, it belongs to the posterior nostril.

Group F. The anterior and posterior nostrils are remote from each other, and the posterior is provided with a barbel.
Bagrina, p. 69.

Group G. The anterior and posterior nostrils are remote from each other, none being provided with a barbel.
Pimelodina, p. 105.

Group H. The anterior and posterior nostrils are placed close together, without barbel, the posterior with a valve.
Ariina, p. 138.

Group I. The anterior and posterior nostrils are placed close together; a barbel between them .... **Bagarina**, p. 183.

Fifth Subfamily.

SILURIDÆ STENOBRANCHIÆ.

The rayed dorsal fin is short, if present, belonging to the abdominal portion of the vertebral column, the ventrals being inserted

behind it (except in *Rhinoglanis*). The gill-membranes are confluent with the skin of the isthmus.

Group K. Rayed dorsal fin present. The anterior and posterior nostrils are remote from each other . . **Doradina**, p. 191.

Group L. The anterior and posterior nostrils are close together. **Rhinoglanina**, p. 216.

Group M. Rayed dorsal fin none . . . . **Malapterurina**, p. 219.

Sixth Subfamily.
SILURIDÆ PROTEROPODES.

The rayed dorsal fin is always present and rather short; the ventrals are inserted below or in front of the dorsal. The gill-membranes are confluent with the skin of the isthmus. Vent before or not much behind the middle of the length of the body.

Group N. The anterior and posterior nostrils are close together, and there is generally a short flap or barbel between them. The lower lip is reverted, and much dilated, forming a broad flap, more or less deeply notched in the middle . . . . . . **Hypostomatina**, p. 221.

Group O. The anterior and posterior nostrils are remote from each other, without barbels. Lower lip not reverted; humero-cubital process much developed and prolonged. **Aspredinina**, p. 265.

Seventh Subfamily.
SILURIDÆ OPISTHOPTERÆ.

The rayed dorsal fin is always present, short, being placed above or behind the ventrals, which, however, in one genus are absent; anal short. Nostrils remote from each other; if a nasal barbel is developed, it belongs to the anterior nostril. Lower lip not reverted. The gill-membranes are not confluent with the skin of the isthmus.

Group P. Dorsal fin above the ventrals. **Nematogenyina**, p. 271.

Group Q. Dorsal fin behind the ventrals, if the latter are present. **Trichomycterina**, p. 272.

Eighth Subfamily.
SILURIDÆ BRANCHICOLÆ.

The rayed dorsal fin is always present and short, placed behind the ventrals; anal short. Vent far behind the middle of the

length of the body. Gill-membranes confluent with the skin of the isthmus.

Group R. A single maxillary barbel on each side.
Stegophilina, p. 276.

Synopsis of the Genera.

First Subfamily. SILURIDÆ HOMALOPTERÆ.

The dorsal and anal fins are very long, nearly equal in extent to the corresponding parts of the vertebral column.

Group A. **Clariina.**

Gill-membranes entirely separate and free; the dorsal is uniformly composed of feeble rays, or its posterior portion is adipose.

Dorsal fin without adipose portion .... 1. Clarias, p. 13.
Two dorsal fins, the posterior adipose ...... 2. Heterobranchus, p. 21.

Group B. **Plotosina.**

Gill-membranes free from the skin of the isthmus, or united with it by a narrow strip only; dorsal divided into two portions, the anterior with a spine; the posterior and the anal united with the caudal.

Gill-membranes entirely separate and free from the isthmus; head depressed. 3. Plotosus, p. 23.
Gill-membranes united anteriorly, but free from the isthmus; head rather compressed .... 4. Copidoglanis, p. 25.
Gill-membranes attached to the isthmus ... 5. Cnidoglanis, p. 27.

Group C. **Chacina.**

Gill-membranes confluent with the skin of the broad isthmus. Two dorsal and two anal fins.

Nostril without barbel .... 6. Chaca, p. 29.

Second Subfamily.
SILURIDÆ HETEROPTERÆ.

Dorsal and adipose fins very short, if present; anal very long; ventrals below or behind the dorsal; gill-membranes entirely separate, overlapping the isthmus.

Group D. **Silurina.**

a. *Gill-cavity with an accessory sac posteriorly.*

Adipose fin none .... 7. Saccobranchus, p. 30.

b. *Gill-cavity without accessory sac.*

aa. *The eye is situated above the level of the angle of the mouth.*

a. Caudal fin rounded.

Adipose fin none .... 8. Silurus, p. 32.

β. Caudal fin obliquely emarginate.

Adipose fin none .... 9. Silurichthys, p. 35.

γ. Caudal fin forked.

Adipose fin none; teeth villiform .... 10. Wallago, p. 36.
Adipose fin none; teeth long, widely set... 11. Belodontichthys, p. 37.
Adipose fin present .... 12. Eutropiichthys, p. 38.

bb. *The eye is situated behind, and partly even below the level of, the angle of the mouth.*

a. The mandibulary barbels are placed at some distance behind the symphysis; or if they are absent, the posterior nostrils are neither wide, nor placed more closely together than the anterior.

* *Mandibles without enlarged muciferous cavities.*

No adipose fin; dorsal quite rudimentary or entirely absent.
13. Cryptopterus, p. 38.

No adipose fin; dorsal fin with several rays, but without pungent spine.
14. Callichrous, p. 45.

No adipose fin; dorsal fin with a pungent spine.
15. Schilbe, p. 49.

Adipose fin present; dorsal with a pungent spine.
16. Eutropius, p. 52.

** *Mandibles with the muciferous cavities enlarged.*

No adipose fin .... 17. Hemisilurus, p. 54.

β. The mandibulary barbels, if present, are placed immediately behind the symphysis; the nostrils are more or less wide, and the anterior are always open, placed quite in front of the snout, and generally more remote from each other than the posterior.

* *Four mandibulary barbels placed in a straight line immediately behind the symphysis of the lower jaw; nostrils rather wide, especially the hinder ones, which are close together on the top of the snout.*

Adipose fin none; dorsal fin without pungent spine.
18. Siluranodon, p. 55.

Adipose fin present; no other dorsal ...... 19. Ailia, p. 55.

Adipose fin none; dorsal fin with a pungent spine.
20. Schilbichthys, p. 56.

Adipose fin present; dorsal fin with a pungent spine; nasal barbels none.
21. Laïs, p. 57.

Adipose fin present; dorsal fin with a pungent spine; a pair of nasal barbels.
22. Pseudeutropius, p. 58.

** *Two mandibulary barbels, placed immediately behind the symphysis of the lower jaw; nostrils rather wide, the anterior being quite in front of the snout.*

Palatine teeth separate from those of the vomer.
23. Pangasius, p. 61.

Teeth on the palate reduced to two small patches, if present.
24. Helicophagus, p. 64.

*** *Mandibulary barbels none; nostrils open: the posterior are closer together than the anterior, which are quite in front of the snout.*

Adipose fin present; maxillary barbels minute.
25. Silondia, p. 65.

Third Subfamily.
SILURIDÆ ANOMALOPTERÆ.

Dorsal and adipose fins very short, the former belonging to the caudal vertebral column; anal very long. Ventrals in front of the dorsal. Gill-membranes entirely separate, overlapping the isthmus.

Group E. **Hypophthalmina.**

The ventral fins are in front of the dorsal.

a. *The eye is small, situated above the level of the angle of the mouth.*

Teeth in the jaws.................................. 26. Helogenes, p. 66.

b. *The eye is situated behind, and partly even below the level of, the angle of the mouth.*

Teeth none .... 27. Hypophthalmus, p. 67.

Fourth Subfamily.
SILURIDÆ PROTEROPTERÆ.

Dorsal fin short, placed anteriorly on the trunk, in advance of the ventrals; adipose fin well developed, sometimes short; anal short, or of moderate length. Gill-membranes not confluent with the skin of the isthmus, with free posterior margin.

Group F. **Bagrina.**

The anterior and posterior nostrils are remote from each other, and the posterior is provided with a barbel.

a. *Teeth on the palate present: Old World.*

* *Four mandibulary barbels.*

Dorsal with 9–10 soft rays, anal with less than 20· teeth on the palate continuous .... 28. Bagrus, p. 69.

Dorsal with 6 soft rays, anal with less than 20; the teeth on the palate form two groups .... 29. Chrysichthys, p. 70.

Dorsal with 6 soft rays, anal with less than 20; the teeth on the palate form four groups .... 30. Clarotes, p. 73.

Dorsal with 7 soft rays, anal with less than 20· teeth on the palate continuous; no moveable labial teeth; orbital margin free.
31. Macrones, p. 74.

Dorsal with 5–7 soft rays, anal with 20 or more.
32. Pseudobagrus, p. 84.

Dorsal with 7 soft rays, anal with less than 20; the teeth of the dorsal spine are not directed upwards; no moveable labial teeth; orbital margin not free.
33. Liocassis, p. 86.

Dorsal with 7 soft rays, anal with less than 20; the teeth of the dorsal spine are directed upwards; no moveable labial teeth; orbital margin not free.
34. Bagroides, p. 90.

The lower jaw with long, moveable teeth in front.
35. Bagrichthys, p. 92.

** *Two mandibulary barbels.*

Teeth on the palate molar-like .... 36. Rita, p. 92.

b. *Palate toothless. Ventral rays six: East Indies.*

Caudal not emarginate .... 37. Acrochordonichthys, p. 94.

Caudal emarginate .... 38. Akysis, p. 96.

Doubtful genera .... 39. Olyra, p. 97.
40. Branchiosteus, p. 98.

c. *Palate toothless. Ventral rays eight or nine: North America.*

V. 8. Adipose fin of moderate length ...... 41. Amiurus p. 98.

V. 9. Adipose fin short and thick .... 42. Hopladelus, p. 103.

V. 9. Adipose fin low, long, subcontiguous or contiguous with the caudal.
43. Noturus, p. 104.

Group G. **Pimelodina.**

The anterior and posterior nostrils are remote from each other, none being provided with a barbel. Tropical America (Africa).

a. *Teeth on palate present.*

* *Snout much prolonged, spatulate.*

The upper jaw is the longer; eyes partly directed downwards.
44. Sorubim, p. 105.

The upper jaw is the longer; eyes lateral or directed upwards.
45. Platystoma, p. 106.

The lower jaw is the longer .... 46. Hemisorubim, p. 109.

Upper jaw very long; ventral below the last dorsal rays.
47. Platystomatichthys, p. 109.

** *Snout not prolonged.*

Adipose fin rayed................................ 48. Phractocephalus, p. 110.

Adipose fin not rayed; head granulated above. D. 1/6.
49. Piramutana, p. 110.

Adipose fin not rayed; head covered with skin above. D. 1/6. Barbels bandlike .... 50. Platynematichthys, p. 111.

Adipose fin not rayed; head covered with skin above. D. 1/6. Barbels filiform .... 51. Piratinga, p. 112.

Dorsal with 10 or 11 soft rays .... 52. Sciades, p. 113.

b. *Palate toothless.*

* *The gill-membranes are separated from each other by a deep notch.*

Dorsal with less than 9 soft rays; broad bands of villiform teeth in both jaws; barbels filiform or slightly compressed ... 53. Pimelodus, p. 114.

Barbels long, band-like .... 54. Pirinampus, p. 135.

Snout pointed; villiform teeth in the upper jaw only.
55. Conorhynchus, p. 135.

Dorsal with 10 soft rays .... 56. Notoglanis, p. 136.

Each jaw with one or two series of small flattish teeth.
57. Callophysus, p. 136.

** *The gill-membranes are united below the throat, scarcely notched in the middle: African.*

Snout pointed .... 58. Auchenaspis, p. 137.

Group H. **Ariina.**

The anterior and posterior nostrils are placed close together, none being provided with a barbel, but the posterior with a valve. Tropics.

a. *Maxillary and mandibulary barbels present.*

* *Mandibulary barbels four.*

Head osseous above; teeth on the palate present and fixed.
59. Arius, p. 138.

Head and nape covered entirely with soft skin; dorsal with 7 soft rays.
60. Galeichthys, p. 174.

Teeth on the palate moveable, in two patches. 61. Genidens, p. 175.

Palatine teeth none; teeth in the jaws villiform.
62. Hemipimelodus, p. 176.

Palatine teeth none; teeth in the jaws in a single series.
63. Ketengus, p. 177.

** *Mandibulary barbels two.*

Adipose fin short .... 64. Ælurichthys, p. 177.

b. *Maxillary barbels only.*

Barbels compressed, band-like .... 65. Paradiplomystax, p. 180.

Barbels fleshy, thick .... 66. Diplomystax, p. 180.

Barbels osseous .... 67. Osteogeniosus, p. 181.

c. *Mandibulary barbels only.*

The cleft of the mouth extends to below the eye.
68. Batrachocephalus, p. 182.

Group I. **Bagarina.**

The anterior and posterior nostrils are placed close together; a barbel between them. Indian.

Thorax without longitudinal plaits .... 69. Bagarius, p. 183.

Thorax with longitudinal plaits; teeth on the palate.
70. Euclyptosternum, p. 183.

Thorax with longitudinal plaits; palate toothless.
71. Glyptosternum, p. 185.

Doubtful genera .... { Hara, p. 189.
Amblyceps, p. 190.

Fifth Subfamily.
SILURIDÆ STENOBRANCHIÆ.

Dorsal fin short, if present, before the ventrals (except in *Rhinoglanis*); gill-membranes confluent with the skin of the isthmus.

Group K. **Doradina.**

Rayed dorsal fin present. The anterior and posterior nostrils are remote from each other.

a. *Adipose fin exceedingly small or absent; lateral line without bony shields: South American.*

* *The cleft of the mouth extends to, or to below, the eye.*

Adipose fin present; barbels two .... 72. Ageniosus, p. 191.

Adipose fin present; barbels four, very small. 73. Tetranematichthys, p. 192.

Adipose fin present; barbels six, the four mandibulary barbels being placed in a transverse series immediately behind the symphysis. 74. Euanemus, p. 193.

Adipose fin present; anal longish; barbels six: a maxillary, an anterior and a posterior mandibulary pair .... 75. Auchenipterus, p. 194.

Adipose fin present; anal short; barbels six. 76. Centromochlus, p. 197.

Adipose fin none; head osseous above ...... 77. Trachelyopterus, p. 198.

Adipose fin none; head covered with thick skin. 78. Cetopsis, p. 199.

** *Cleft of the mouth very wide, extending far behind the eye.*

Adipose fin present .... 79. Astrophysus, p. 200.

b. *Lateral line armed with bony shields: South American.*

Adipose fin short, very distinct; teeth villiform; barbels not fringed. 80. Doras, p. 200.

Adipose fin short, very distinct; teeth rudimentary; barbels fringed. 81. Oxydoras, p. 206.

Adipose fin low, longish .... 82. Rhinodoras, p. 209.

c. *Adipose fin of moderate length; lateral line without bony shields: African.*

The lower jaw with moveable teeth .... 83. Synodontis, p. 210.

Group L. **Rhinoglanina.**

The anterior and posterior nostrils are close together.

Adipose fin replaced by a rayed fin; neck with broad shields. 84. Rhinoglanis, p. 216.

Adipose fin replaced by a rayed fin; neck covered with skin. 85. Mochocus, p. 217.

A nasal barbel .... 86. Callomystax, p. 218.

Group M. **Malapterurina.**

No rayed dorsal fin. Africa.

Adipose fin of moderate length .... 87. Malapterurus, p. 219.

Sixth Subfamily.
SILURIDÆ PROTEROPODES.

The rayed dorsal fin is always present, and rather short; ventrals below or in front of the dorsal. Gill-membranes confluent with the skin of the isthmus. Vent before, or not much behind, the middle of the length of the body.

Group N. **Hypostomatina.**

Anterior and posterior nostrils close together, generally with a flap between them. Lower lip reverted and dilated.

a. *Head and body entirely covered with soft skin; maxillary barbels only: South American.*

Adipose fin low, elongate	88. Arges, p. 222.
Adipose fin short, with a moveable spine ...	89. Stygogenes, p. 223.
Adipose fin none, ventrals present............	90. Brontes, p. 224.
Adipose and ventral fins absent...............	91. Astroblepus, p. 224.

b. *Body completely cuirassed: South American.*

* *Two barbels at each angle of the mouth.*

Adipose fin short, with a moveable spine ...	92. Callichthys, p. 225.

** *Body with four or five longitudinal series of scutes on each side; tail rounded or compressed.*

Adipose fin present, with a short spine; eight dorsal rays; interoperculum without erectile armature	93. Plecostomus, p. 230.
Adipose fin present, with a short spine; from 13–14 dorsal rays; interoperculum without armature..............................	94. Liposarcus, p. 238.
Adipose fin present, with a short spine; from 8–10 dorsal rays; interoperculum with erectile spines	95. Chætostomus, p. 240.
Adipose fin present, with a short spine; from 12–14 dorsal rays; interoperculum with erectile spines	96. Pterygoplichthys, p. 251.
Adipose fin none; interoperculum without armature.	97. Rhinelepis, p. 252.
Adipose fin none; interoperculum with erectile spines.	98. Acanthicus, p. 253.

*** *Tail long and depressed.*

Snout produced and spatulate	99. Loricaria, p. 254.
Snout very long and narrow	100. Acestra, p. 260.

c. *Head partly osseous and rough; body naked or with bony plates on the back: East Indian.*

No adipose fin	101. Sisor, p. 262.
Adipose fin present	102. Erethistes, p. 263.

d. *Head and body covered with skin; a pair of nasal barbels: East Indian.*

A plaited adhesive apparatus between the pectorals.	103. Pseudecheneis, p. 264.
Lower lip very broad, reflected	104. Exostoma, p. 264.

Group O. **Aspredinina.**

Anterior and posterior nostrils remote from each other, without barbels. Lower lip not reverted. South America.

a. *Anal fin short.*

Head higher than the hind part of the tail. 105. Bunocephalus, p. 266.
Head lower than the hind part of the tail... 106. Bunocephalichthys, p. 267.

b. *Anal fin long.*

Barbels not less than six........................ 107. Aspredo, p. 267.

Seventh Subfamily.
SILURIDÆ OPISTHOPTERÆ.

The rayed dorsal fin is placed above or behind the ventrals; anal short. Gill-membranes not confluent with the skin of the isthmus. South America.

Group P. **Nematogenyina.**

Dorsal fin above the ventrals.

Adipose fin present.............................. 108. Heptapterus, p. 271.
Anterior nostril with a barbel .... 109. Nematogenys, p. 272.

Group Q. **Trichomycterina.**

Dorsal fin behind the ventrals, if the latter are present.

a. *Anterior nostril with a barbel; two maxillary barbels on each side.*

Ventrals present .... 110. Trichomycterus, p. 272.
Ventrals none .... 111. Eremophilus, p. 275.

b. *No nasal barbel; two maxillary barbels on each side.*

Jaws with a single series of teeth .... 112. Pariodon, p. 275.

Eighth Subfamily.
SILURIDÆ BRANCHICOLÆ.

The rayed dorsal fin is always present, short, and placed behind the ventrals. Vent far behind the middle of the length of the body. Gill-membranes confluent with the skin of the isthmus. South America.

Group R. **Stegophilina.**

A single maxillary barbel on each side.

Jaws with a broadish band of minute teeth. 113. Stegophilus, p. 276.
Jaws toothless; a series of long pointed teeth on the vomer.
114. Vandellia, p. 276.

First Subfamily.
SILURIDÆ HOMALOPTERÆ.

The dorsal and anal fins are nearly equal in extent to the corresponding portions of the vertebral column.

First Group. CLARIINA.

The gill-membranes are not confluent with the skin of the isthmus, remaining separate to the chin. The dorsal is uniformly composed of feeble rays, or its posterior portion is modified into an adipose fin.

Africa and East Indies.

1. CLARIAS*.

Clarias, *Gronov. Zoophyl.* p. 100.
Macropteronotus, *Lacép.* v. p. 84.

Adipose fin none; dorsal long, extending from the neck to the caudal; anal long. Jaws with a band of villiform teeth; a band of villiform or granular teeth across the vomer; cleft of the mouth transverse, anterior, of moderate width; barbels eight: one pair of nasal, one of maxillary, and two pairs of mandibulary barbels. Eyes small, with a free orbital margin. The upper and lateral parts of the head are osseous, or covered with only a very thin skin. A dendritic, accessory branchial organ is attached to the convex side of the second and fourth branchial arches, and received in a cavity behind the gill-cavity proper. Ventrals six-rayed; only the pectoral has a pungent spine.

Africa and East Indies.

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* 1. Clarias hasselquistii, *Cuv. & Val.* xv. p. 362. pl. 446 (not synon.).—Nile.—Among the numerous examples from the Nile which I have examined, I have not met with one which would agree with Valenciennes's description of his *Cl. hasselquistii*: it is said to have very short barbels, the nasal being only one-fourth, and those of the maxillary one-half of the length of the head. The vomerine teeth are described as villiform, forming a band "étroite, assez large et rétrécie dans le milieu." The figure represents this band with a very prominent median posterior process.

2. —— dussumieri, *Cuv. & Val.* xv. p. 382.—Malabar.
3. —— fuscus, *Cuv. & Val.* xv. p. 383 (not synon.).—Sumatra.
4. —— senegalensis, *Cuv. & Val.* xv. p. 376.—Senegal.
5. —— læviceps, *Gill, Proc. Acad. Nat. Sc. Philad.* 1862, p. 139.—West Africa.—D. 86. A. 61. Head a sixth of total length, maxillary barbels a third.

The species may be subdivided thus:—

A. Caudal free.

* The occipital process is prominent, and angular behind: African and Syrian species, p. 14.

** The occipital process is not very prominent, and rounded behind: East Indian species, p. 17.

B. Vertical fins united, p. 20.

A. Caudal free.

* The occipital process is prominent, and angular behind.

1. **Clarias anguillaris.**

Silurus anguillaris, *Linn. in Hasselq. Reise Palæst.* p. 415, and *Syst. Nat.* i. p. 502.
Karmouth, *Sonnini, Voy.* ii. p. 289. pl. 22. fig. 2.
Heterobranchus anguillaris, *Geoffr. St.-Hil. Descript. Eg. Poiss.* pl. 16. fig. 1, cop. with some slight alterations in *Cuv. Règne Anim. Ill.* pl. 101. fig. 2.

D. 69–73. A. 53–55. P. 1/9.

Vomerine teeth villiform, forming a band, which in its middle is narrower than that of the intermaxillaries; it has not a process behind in the middle of its concavity. Head densely granulated above, its length being one-fourth, or rather more than one-fourth, of the total. Barbels slender: those of the nostril two-fifths or one-third as long as, and those of the maxillaries rather shorter than, the head. The pectoral fin extends to, or nearly to, the vertical from the origin of the dorsal; its spine is short, two-thirds as long as the fin.

Nile; West Africa.

a–b, c. Fourteen to eighteen inches long. Upper Nile. From Consul Petherick's Collection.

d. Adult. West Africa. Purchased of Mr. Dalton.

Hasselquist very distinctly describes the band of vomerine teeth as narrower than that of the intermaxillaries.

2. **Clarias gariepinus.**

Silurus (Heterobranchus) gariepinus, *Burchell, Travels in the Interior of South Africa*, i. p. 425, c. fig. p. 445.
? Clarias capensis, *Cuv. & Val.* xv. p. 377.
Clarias capensis, *Smith, Illustr. Zool. S. Afr. Fish.* c. tab. (not good).
? Clarias mossambicus, *Peters, Monatsber. Berl. Acad.* 1852, p. 682. (D. 60.)

D. 66–69. A. 52–54. P. 1/10.

Vomerine teeth villiform, forming a long, continuous crescentic band, which in its middle is as wide as that of the intermaxillaries, and which has not a process behind in the middle of its concavity. Head densely granulated above, covered with smooth soft skin in fresh specimens, its length being rather more than one-fourth of the total. Barbels of moderate length, those of the nostrils being one-third of the length of the head, and those of the maxillaries extending to or beyond the root of the pectoral. The pectoral fin reaches somewhat beyond the vertical from the origin of the dorsal, and the length of its spine is three-quarters of that of the fin.

Port Natal. (Cape of Good Hope?)

a. Twenty-five inches long: stuffed. Port Natal. From Sir A. Smith's Collection.

b, *c*. Very fine specimens. Port Natal. Purchased of Mr. Th. Ayres.

We very much doubt whether our specimens belong to the same species as *C. capensis*, C. & V. The latter is said to have seventy-six dorsal and eleven pectoral rays, and the vomerine teeth disposed in two small, distinct, curved bands; moreover the typical specimen is from the Cape of Good Hope. We have also a stuffed specimen from the Cape; it has seventy-six dorsal rays, but the vomerine teeth arranged in the same manner as in our specimens from Port Natal.

3. Clarias parvimanus.

D. 76. A. 57. P. 1/8.

Vomerine teeth villiform, those in the middle of the band conical. The band of vomerine teeth is in its middle rather broader than that of the intermaxillaries; it has a very short process in the middle of its concavity. Head rather finely granulated above, its length being one-fourth of the total. Barbels slender, those of the nostril one-third as long as the head, those of the maxillary shorter than the head. The pectoral fin does not extend to the vertical from the origin of the dorsal; its spine is short, not quite two-thirds as long as the fin. The dorsal does not extend on to the root of the caudal.

Nile.

a. Twelve inches long. From Dr. E. Rüppell's Collection as *Clarias hasselquistii*.

4. Clarias orontis.

Silurus anguillaris, *Russell, Nat. Hist. Alepp.* ii. p. 217. pl. 8 (not *L.*)
Clarias, *Gronov. Zoophyl.* p. 100.

D. 74. A. 54. P. 1/10.

Vomerine teeth very small, subconical, forming a band, which is equal in width to that of the intermaxillaries; it has a very short and obtuse process behind, in the middle of its concavity. Head densely granulated above, its length being a little less than one-fourth of the total. Barbels long, those of the maxillaries being twice as long as the nasal, and as long as the head. The pectoral fin extends to the vertical from the origin of the dorsal fin; the length of its spine is three-fourths of that of the fin.

River Orontes.

a. Seventeen and a half inches long. From A. Russell's Collection.

5. **Clarias lazera.**

Cuv. & Val. xv. p. 372; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17.

D. 77. A. 58. P. 1/10. Vert. 20/41 (*C. & V.*): 17/45 (*Hyrtl*).

Vomerine teeth granular, forming a band, which in its middle is broader than that of the intermaxillaries; it has not a process behind in the middle of its concavity. Head coarsely granulated above, its length being one-fourth of the total. Barbels long: those of the nostril extend nearly to the root of the pectoral, those of the maxillary beyond the origin of the dorsal. The pectoral fin extends to, or somewhat beyond, the vertical from the origin of the dorsal; its spine is short, not quite two-thirds as long as the fin. The dorsal extends to the root of the caudal.

Nile.

a, b, c–e. Adult, half-grown, and young. Upper Nile. From Consul Petherick's Collection.

f–h. Young. Gondokoro. From Consul Petherick's Collection.

i. Dried. Nile. Presented by G. MacLeay, Esq.

6. **Clarias macracanthus.**

D. 70–75. A. 54–55. P. 1/9. Vert. 19/43.

Vomerine teeth granular, forming a band, which in its middle is twice as broad as that of the intermaxillaries, and in the middle of its posterior margin has a very short inconspicuous process. Head coarsely granulated above, its length being a little more than one-fourth of the total. Barbels of moderate length, those of the nostril being two-fifths as long as, and those of the maxillary extending to the end of, the head. The pectoral fin reaches to the vertical from the origin of the dorsal; the length of its spine is three-quarters, or rather more than two-thirds, of that of the fin.

Nile.

a, b–c. Sixteen inches long. Upper Nile. From Consul Petherick's Collection.

d. Adult. From the Collection of the Zoological Society.

e. Adult: skeleton. From Dr. E. Rüppell's Collection as *Cl. hasselquistii.*

7. **Clarias xenodon.**

D. 68. A. 54. P. 1/9.

Vomerine teeth granular, forming a crescentic band, which in its middle is twice as broad as that of the intermaxillaries, and in the middle of its posterior margin has a very short and inconspicuous process. The band of mandibulary teeth is as broad as that on the vomer, and composed of villiform teeth anteriorly, and of granular posteriorly. Head coarsely granulated above, its length being rather more than one-fourth of the total. Barbels of moderate length, those of the nostrils being half as long as the head, and those of the maxillary extending to the end of the pectoral spine. The pectoral fin reaches beyond the vertical from the origin of the dorsal, and the length of its spine is four-fifths of that of the fin.

Senegal.

a. Ten and a half inches long. West Africa. Purchased of Mr. Dalton.

8. Clarias macromystax.

D. 78. A. 59. P. 1/9.

Vomerine teeth finely granular, forming a band, which is not quite twice as broad as that of the intermaxillaries, and which is not produced laterally into posterior processes. The lower jaw with a very broad band of teeth. Head finely granulated, its length being two-ninths of the total. Barbels long: those of the nostrils are as long as the head, and those of the maxillaries extend to the twelfth dorsal ray. The pectoral fin reaches a little beyond the origin of the dorsal, and the length of the spine is four-fifths of that of the fin.

Gambia.

a. Fine specimen. Purchased of Mr. Dalton.

9. Clarias syriacus.

Cuv. & Val. xv. p. 375.

D. 60. A. 52. P. 1/10.

The band of vomerine teeth is produced behind into a median process. Head coarsely granulated, its length being two-sevenths of the total. Barbels rather long. (*Val.*)

Syria.

** The occipital process is not very prominent, and rounded behind.

10. Clarias magur.

??Silurus batrachus, *L. Syst. Nat.* i. p. 502.
?Silurus batrachus, *Bl.* taf. 370. fig. 1†; *Bl. Schn.* p. 386.
?Marpoo, *Russell, Fish. Corom.* ii. p. 53. pl. 168.
?Macropteronotus batrachus, *Lacép.* v. pp. 84, 85.
Macropteronotus magur, *Ham. Buch.* pp. 146, 374. pl. 26. fig. 45.
Clarias marpus, *Cuv. & Val.* xv. p. 378.
—— magur, *Cuv. & Val.* xv. p. 381; *Bleek. Verh. Bat. Gen.* xxv., *Nalez. Ichth. Beng.* p. 124.
—— punctatus, *Cuv. & Val.* xv. p. 384; *Bleek. Verh. Bat. Gen.* xxi., *Sil. Batav.* p. 53; *Cant. Mal. Fish.* p. 263.
?Clarias batrachus, *Cuv. & Val.* xv. p. 385.
Clarias batrachus, *Bleek. Prodr. Silur.* p. 343, and *Atl. Ichth. Silur.* p. 103. tab. 98. fig. 2.

D. 64–70. A. 50–53. P. 1/8.

Caudal fin free. Vomerine teeth villiform, forming a crescentic band, which is as broad as, or narrower than, that of the intermaxillary. Head finely granulated above, its length (to the end of the occipital process) being somewhat more than one-fourth of the total

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† Bloch represents a *Clarias* with very long barbels, those of the maxillary extending to the ventral fins: if this be really the case, the fish represented by Bloch would belong to a distinct species.

(without caudal); its width between the gill-openings is two-thirds of its length. Barbels long: the nasal extending to the base of the occipital process, and that of the maxillary to, or nearly to, the extremity of the pectoral. The pectoral spine is very finely serrated, the serrature being hidden below the skin; its length is three-fourths of that of the fin.

Bengal, Khasya. East Indian Archipelago.

a, b. Adult and half-grown. Ganges. Presented by G. R. Waterhouse, Esq.—Types of *M. magur*, Ham. Buch.
c. Half-grown. Calcutta. From the Collection of Messrs. von Schlagintweit.
d. Half-grown: skin. Pinang. From Dr. Cantor's Collection.
e. Young. Khasya. Presented by Sir W. Hooker.
f. Adult. East Indian Archipelago. From Dr. P. v. Bleeker's Collection.
g–k. Adult and half-grown: stuffed. India.
l–m. Half-grown. From the Haslar Collection.

11. **Clarias macrocephalus.**

D. 70. A. 50. P. 1/8.

Caudal fin free. Vomerine teeth small, obtusely conical, forming a crescent-shaped band which, in its middle, is rather broader than that of the intermaxillaries, and which has no process behind in the middle. Head finely granulated above; its length to the end of the occipital process is one-fourth of the total (with the caudal); the height of the body is one-sixth of the total in adult specimens. Occipital process very obtuse and rounded in adult specimens, rather more prominent in younger individuals. The width of the head between the gill-openings is two-thirds of its length (to the end of the occipital process), its width between the eyes is two-fifths of its length. Barbels of moderate length: those of the nostril extend to, or somewhat beyond, the gill-opening; those of the maxillary to the middle or to the end of the pectoral. The pectoral fin reaches a little beyond the vertical, from the origin of the dorsal fin; its spine is nearly smooth, the fine serrature being hidden below the skin; its length is three-quarters of that of the fin. Uniform blackish brown, lighter below.

Siam.

a–b, c–d. Adult (12–13 inches long) and half-grown. Siam. Purchased of Mr. Jamrach.

12. **Clarias fuscus.**

Macropteronotus fuscus, *Lacép.* v. p. 88. pl. 2. fig. 2.
Clarias pulicaris, *Richards. Voy. Sulph. Fish.* p. 135. pl. 62. figs. 5 & 6.

D. 59–65. A. 44–47. P. 1/9.

Caudal fin free. Vomerine teeth villiform, forming a crescentic band which is narrower than that of the intermaxillary. Head finely granulated above, its length (to the end of the occipital process) being somewhat more than one-fourth of the total (without caudal); its width between the gill-openings is but little more than two-thirds of its length. Barbels long: the nasal extending to the base of the occipital process, and that of the maxillary to the extremity of the pectoral. The pectoral spine is finely serrated, the serrature being hidden below the skin; its length is two-thirds, or somewhat less than two-thirds, of that of the fin.

China.

a. Five and one-third inches long. China. Presented by J. R. Reeves, Esq.—Type of *Cl. pulicaris*.
b, *c–d*. Young. China.
e–g. Young. Hongkong. Presented by J. C. Bowring, Esq.
h–i. Young. From the Haslar Collection.

13. **Clarias abbreviatus.**

Cuv. & Val. xv. p. 386.

D. 62. A. 32.

The height of the body is one-fifth of the total length; maxillary barbel thick, not extending on to the gill-opening; nasal barbel longer and more slender. (*Val.*)

Macao.

14. **Clarias melanoderma.**

Clarias melanoderma, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 54; *Prodr. Silur.* p. 341; and *Atl. Ichth. Silur.* p. 102. tab. 97. fig. 2.
—— melasoma (melanosoma), *Bleek. Nat. Tydschr. Ned. Ind.* iii. p. 427.

D. 68–73. A. 51–61. P. 1/9.

Caudal fin free. Vomerine teeth obtuse, forming a crescent-shaped band which, in its middle, is rather broader than that of the intermaxillaries. Head rather smooth, its length being one-fourth of the total (without caudal); the occipital process is very obtuse. Barbels long; those of the nostril reach to the end of the head, those of the maxillary beyond the extremity of the pectoral. Pectoral spine strong, much compressed, rather more than two-thirds of the length of the fin; its extremity is armed with rather strong, recurved spinous teeth.

Java, Sumatra, Banka, Borneo.

a. Adult. Purchased of Mr. Frank.

Bleeker has observed two specimens in which the band of vomerine teeth was divided into two by a toothless space in the middle; another specimen had the last ray of the dorsal and anal fins united with the caudal.

15. **Clarias teysmanni.**

Bleeker, Nat. Tydschr. Nederl. Ind. xiii. p. 344; *Prodr. Silur.* p. 348; and *Atl. Ichth. Silur.* p. 104. tab. 99. fig. 1.

D. 70–77. A. 60–63. P. 1/7–9. Vert. 16/41.

Caudal fin free. Vomerine teeth obtuse, forming a crescent-shaped band which, in its middle, is not broader than that of the intermaxillaries. Head rather smooth, its length being two-ninths of the total (without caudal); the height of the body is contained from six times and a half to eight times in the total length (without caudal). Barbels long; those of the nostril reach to the base, and those of the maxillary to the extremity of the pectoral fin. The pectoral fin does not extend to the vertical from the origin of the dorsal; pectoral spine moderately strong, rather more than two-thirds of the length of the fin, finely serrated nearly to its extremity.

Java, Ceylon.

a. Type of the species. Java. From Dr. P. v. Bleeker's Collection.
b, c–e. Adult, half-grown, and young. Ceylon (Point de Galle).
f. Adult: skeleton. Ceylon.

16. Clarias liacanthus.

Bleeker, Nat. Tydschr. Nederl. Ind. ii. p. 430; *Prodr. Silur.* p. 347; and *Atl. Ichth. Silur.* p. 104. tab. 98. fig. 1.

This species is very closely allied to the preceding, but its pectoral spine has the outer edge not serrated, and its depth is contained only six times, or six times and four-fifths, in the total length (without caudal).

Sumatra, Banka, Nias, Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

17. Clarias brachysoma.

D. 75. A. 60. P. 1/10.

Caudal fin free. Vomerine teeth obtuse, forming a crescent-shaped band which is considerably narrower than that of the intermaxillaries. Head smooth above, with the occipital process somewhat prominent, two-thirds as long as broad; its length is two-sevenths or rather more than one-fourth of the total (without caudal), the height of the body one-sixth. Barbels long; those of the nostril reach to the end of the head, those of the maxillary beyond the extremity of the pectoral. The pectoral extends to the vertical from the origin of the dorsal fin; its spine is strong, finely serrated along its outer margin, and two-thirds of the length of the fin. Uniform brown.

Ceylon.

a–c. From 5 to 6 inches long. Purchased of Mr. Cuming.

B. Vertical fins united.

18. Clarias nieuhofii.

Bontael, *Nieuh. Lant- en Zee-reize*, p. 271.
Lampreta indica, *Will. Ichth. App.* p. 4. tab. 6. fig. 2.
Clarias nieuhofii, *Cuv. & Val.* xv. p. 386; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17; *Bleek. Prodr. Silur.* p. 351, and *Atl. Ichth. Silur.* p. 105. tab. 99. fig. 1.
—— pentapterus, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 206.

D. 90–97. A. 74–75. P. 1/9. Vert. 19/56.

Caudal fin united with dorsal and anal. Vomerine teeth small, obtusely conical, forming a band which is rather broader than that of the intermaxillary. Head very finely granular above, its length being one-sixth, or somewhat less than one-sixth, of the total (with the caudal). Barbels long; the nasal extending to the end of the head, and that of the maxillary to, or beyond, the extremity of the pectoral. Pectoral fin short, not reaching the vertical from the origin of the dorsal.

East Indian Archipelago.

a. Fifteen inches long. Purchased of Mr. Frank.
b. Half-grown. Philippine Islands. From Mr. Cuming's Collection.

According to Bleeker the number of the dorsal rays would vary between 87 and 106, and that of the anal rays between 69 and 95.

19. Clarias jagur.

Macropteronotus jagur, *Ham. Buch. Fish. Gang.* p. 145.
Clarias jagur, *Cuv. & Val.* xv. p. 388.
Cossyphus (Phagorus) ater, *M'Clell. Calc. Journ.* iv. p. 403. pl. 22. fig. 3 (mutilated), and v. p. 225 (Errata).

D. 53. A. 50.

Caudal fin united with dorsal and anal.

Ganges.

2. HETEROBRANCHUS*.

Heterobranchus, *Geoffr. St.-Hil.*

The back is occupied by a long dorsal fin divided into two portions, an anterior which is rayed, and a posterior which is adipose; anal long. A band of villiform teeth across the vomer; cleft of the mouth, the eight barbels, the armature of the head, the gill-apparatus with the accessory organs, the ventral and pectoral fins, as in *Clarias*.

Africa and East Indies.

The structure of the dorsal fin is almost the only point of importance in which the genus *Heterobranchus* differs from *Clarias*; however, we must remark, that in well-fed specimens of the latter genus the whole fin assumes an adipose appearance, in consequence of a thick layer of fat deposited along the base; and that, on the other hand, very distinct traces of rays may be seen in the adipose fin of *Heterobranchus*.

The *skeleton* does not differ from that of *Clarias*, except that the neural spines of that portion of the caudal vertebral column which corresponds to the adipose fin are much longer, the interneural spines, of course, being absent.

1. Heterobranchus bidorsalis.

Heterobranchus bidorsalis, *Geoffr. Descr. Eg. Atl. Poiss.* pl. 16. fig. 2.
—— geoffroyi, *Cuv. & Val.* xv. p. 392.

B. 12–13. D. 44. A. 52. P. 1/10. Vert. 21/42.

The length of the adipose fin is rather less than two-thirds of the rayed dorsal; pectoral spine slightly serrated. The nasal barbels are half as long as those of the maxillary, which reach only to the gill-opening. Vomerine teeth villiform, forming a crescentic band.

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* 1. Heterobranchus senegalensis, *Cuv. & Val.* xv. p. 397.—Senegal.

Nile.

2. Heterobranchus intermedius.

B. 9. D. 39–41. A. 49–50. P. 1/10. Vert. 19/43.

The length of the adipose fin is rather less than two-thirds of that of the rayed dorsal; pectoral spine scarcely serrated. The nasal barbels extend to, or beyond, the end of the occipital process, those of the maxillaries beyond the root of the ventral fin. Vomerine teeth villiform, forming a crescent-shaped band, which, in its middle, is much broader than that of the intermaxillaries, and has a short median posterior process. Blackish above, whitish below.

Otherwise very similar to the other species.

Upper Nile

a, *b*. Adult (15 inches long) and half-grown. Khartoum. From Consul Petherick's Collection.

c. Adult: skeleton. Khartoum. From Consul Petherick's Collection.

d. Preparation of the branchial organs and intestines of specimen *c*.

3. Heterobranchus tapeinopterus.

Bleeker, *Nat. Tydschr. Nederl. Ind.* iii. p. 732; *Prodr. Silur.* p. 337; and *Atl. Ichth. Silur.* p. 101. tab. 97. fig. 1.

B. 8. D. 24–27. A. 49–51.

The adipose fin is much lower, but rather longer, than the rayed dorsal; caudal united with adipose fin and with anal. The length of the head is rather more than one-sixth of the total (without caudal). Pectoral spine distinctly serrated. The nasal barbels extend to the base of the pectoral, those of the maxillaries to, or beyond, the extremity of that fin. (*Bl.*)

Banka and Borneo.

a. Young. From Dr. P. v. Bleeker's Collection.

4. Heterobranchus longifilis.

Cuv. & Val. xv. p. 394. pl. 447.

B. 9–10. D. 29–31. A. 44–46. P. 1/10.

The adipose fin commences immediately behind the dorsal and terminates at the root of the caudal; its length is equal to, or not much less than, that of the rayed dorsal; pectoral spine distinctly serrated. The length of the anal fin is nearly one-third of the total (without caudal). The nasal barbels extend to the base of the occipital process, those of the maxillaries to the root of the ventral fin; but they appear to be rather shorter in large specimens. Vomerine teeth villiform, forming an arched band which is as broad as that of the intermaxillaries. Blackish above, whitish below.

Nile.

a. Young: 7 inches long. Nile.

b. Young: not good state. Khartoum (rain-water pond). Presented by Consul Petherick.—Vernacular name, *Garmoot*.

5. Heterobranchus isopterus.

Heterobranchus isopterus, *Bleek. Poiss. Côte de Guinée*, p. 108. tab. 22.
—— macronema, *Bleek. l. c.* p. 109. tab. 21. fig. 1, tab. 22. fig. 2.

B. 9. D. 31–32. A. 41–45. P. 1/10.

Adipose fin rather shorter and lower than the rayed dorsal, commencing at a short distance behind it, and terminating immediately before the caudal; pectoral spine scarcely serrated. The length of the anal fin is considerably more than one-third of the total (without caudal). The nasal barbels extend to the end of the head, and those of the maxillaries to or beyond the extremity of the pectoral fin. The vomerine teeth form an arched narrow band, narrower than that of the intermaxillaries. Black above and on the sides; the caudal and anal fins with a narrow whitish margin.

West Africa.

a–b. Seven inches long. West Africa. From the Collection of C. Swanzz, Esq.

6. Heterobranchus laticeps.

Peters, Monatsber. Acad. Wiss. Berl. 1852, p. 682.

B. 9–10. D. 30–33. A. 44–45. P. 1/11–12.

The adipose fin commences at some distance behind the dorsal, and is continued over and beyond the root of the caudal. The maxillary barbels reach beyond the ventral fins. Anal and caudal fins with red margins. (*Pet.*)

Coast of Mozambique.

Hyrtl (Denkschr. Acad. Wiss. Wien, 1859, xvi. p. 17) mentions a skeleton in his collection under the name of *H. laticeps*; it has 18 abdominal and 39 caudal vertebræ.

Second Group. PLOTOSINA.

The gill-membranes are not confluent with the skin of the isthmus, or united with it by a narrow strip only, remaining more or less separate. The dorsal is divided into two portions: a short anterior with a strong spine, and a long posterior which, like the anal, is confluent with the caudal. Ventrals many-rayed.

Coasts of the Indian Ocean and Archipelago; Western Polynesia and Australia.

3. PLOTOSUS.

Plotosus, *Lacép.* v. p. 129.
Plotosus, sp., *Cuv. & Val.* xv. p. 410; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 151.

A short dorsal in front, with a pungent spine; a second long dorsal is united with the caudal and anal into one fin, which is pointed behind. Teeth in the upper jaw conical, on the vomer molar-like, in the lower jaw mixed. Barbels eight: one immediately before the posterior nostril, which is distant from the anterior, the latter being quite in front of the snout. Cleft of the mouth transverse. Eyes small. The gill-membranes are separate from each other, not attached to the isthmus. Branchial arches without particular cartilaginous posterior processes and without posterior membrane. Ventral fins many-rayed. Head depressed.

Coasts of the Indian Ocean and Archipelago; Western Polynesia.

1. Plotosus anguillaris.

Valent. Amb. iii. p. 502. fig. 496; *Renard, Poiss. Mol.* i. tab. 3. fig. 19; *Russell*, ii. p. 51. pl. 166.
Silurus arab, *Forsk. Descript. Anim.* p. xvi. no. 36.
Platystacus anguillaris, *Bloch*, viii. p. 61. tab. 373. fig. 1; *Bl. Schn.* p. 373. tab. 74; *Shaw, Zool.* v. p. 30. pl. 99.
Plotosus anguillaris, *Lacép.* v. p. 130. pl. 3. fig. 2; *Rüpp. N. W. Fische*, p. 76; *Cant. Mal. Fish.* p. 264; *Peters, in Wiegm. Arch.* xxi. p. 267; *Bleek. Silur.* p. 314.
Plotosius ikapor, *Less. Voy. Coqu. Zool.* ii. p. 132. pl. 31. fig. 3.
Plotosus marginatus, *Bennett, in Life of Raffles*, p. 691.
—— lineatus, *Cuv. & Val.* xv. p. 412; *Richards. Fish. Chin.* p. 286; *Schleg. Faun. Jap. Poiss.* p. 228. pl. 104. fig. 3; *Bleek. in Verh. Bat. Gen.* xxi., *Silur. Batav.* pp. 4, 17, 57.
—— castaneus, *Cuv. & Val.* xv. p. 421.
—— castaneoides, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 490.
—— arab, *Bleek. Atl. Ichth. Silur.* p. 98. tab. 95. fig. 2.

B. 12. 1 D. 1/4–5. 2 D.+C.+A. 169–189. P. 1/11. V. 12. Vert. 12/35.

The length of the head is about one-fifth of the total length (with the caudal), the height of the body one-seventh or one-eighth. Barbels not very long: those of the nostril extend to the eye, and those of the maxillary are about half as long as the head. Brown or black, generally with two white longitudinal bands, the upper of which commences at the snout, and runs above the eye along the base of the dorsal fin; the lower proceeds from the maxillary barbel along the middle of the side of the body. Vertical fins with dark margin.

From the eastern coasts of Africa to Japan and Polynesia.

a. Adult: skin. Pinang. From Dr. Cantor's Collection.
b–c. Adult: not good state. Sumatra. From the Collection of Sir T. S. Rafflès.—Types of *Pl. marginatus.*
d–f. Half-grown. Borneo. Presented by Capt. Sir E. Belcher.
g, h, i. Adult. East Indian Archipelago.
k. Adult. Amoy. From Consul Swinhoe's Collection.
l–o. Adult: stuffed: bad state. China.
p. Adult. Philippine Islands. From Mr. Cuming's Collection.
q–r. Adult. Feejee Islands. Voyage of the 'Herald.'
s. Adult. Moreton Bay. Presented by Mr. Strange.
t, u, v. Many half-grown and young specimens.
w. Adult: skeleton. Presented by the Royal College of Surgeons.

2. Plotosus canius.

Plotosus canius, *Ham. Buch. Fish. Gang.* p. 142. pl. 15. fig. 44; *Cuv. & Val.* xv. p. 425; *Bleek. Verh. Bat. Gen.* xxv., *Nalez. Beng.* p. 125, *Prodr. Silur.* p. 318, and *Atl. Ichth. Silur.* p. 99. tab. 96. fig. 2; *Kner, Sitzgsber. Wien. Acad.* xvii. p. 157.
—— unicolor, (*Kuhl & v. Hass.*) *Cuv. & Val.* xv. p. 426; *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 58.
—— horridus, *Bleek. l. c.* p. 59.
—— viviparus, *Bleek. l. c.* p. 59.
—— multiradiatus, *Bleek. l. c.* p. 60.
? Plotosus cæsius, *Hyrtl, Acad. Wiss. Wien*, 1859, xvi. p. 17.

B. 12. 1 D. 1/5. 2 D.+C.+A. 244–271. P. 1/10–11. V. 12. Vert. 15/65 (*Hyrtl*).

The length of the head is contained five times and a half in the total length (with caudal), the height of the body nine or ten times. Barbels of moderate length: those of the nostril extend to the nape of the neck, those of the maxillary to the end of the operculum. Eye not covered by the skin, rather small, one-third as long as the snout. The band of intermaxillary teeth is more than twice as broad as long; the vomerine teeth form a crescent-shaped band. Uniform brownish above.

Bengal. East Indian Archipelago.

a. Adult: stuffed. Ganges. Presented by G. R. Waterhouse, Esq.
b. Half-grown. Ganges. Presented by G. R. Waterhouse, Esq.
c. Half-grown: bad state. Calcutta. From the Collection of Messrs. von Schlagintweit.
d. Young. Pinang. From Dr. Cantor's Collection.
e–f. Three feet long: stuffed.

3. Plotosus limbatus.

Cuv. & Val. xv. p. 422.

2 D.+C.+A. 224.

The length of the head is contained five times and a half or six times in the total length. The nasal barbels extend to the posterior margin of the eye, and those of the maxillary to the gill-opening. Uniform dark-coloured; fins with the margin black. (*Val.*)

Hindostan.

4. COPIDOGLANIS.

A short dorsal in front, with a pungent spine,; a second long dorsal is united with the caudal and anal into one fin. Teeth in the upper jaw conical, on the vomer molar-like, in the lower jaw mixed. Barbels eight; nostrils as in *Plotosus*. Cleft of the mouth transverse. Eyes of moderate size, with a free orbital margin. The gill-membranes are separated by a deep notch, united anteriorly only, the united portion not being attached to the isthmus. The first branchial arch with a fringed membrane along the hinder edge of its concave side. Ventral fins many-rayed. Head rather compressed.

Coasts and rivers of Australia and of the East Indian Archipelago.

1. Copidoglanis tandanus.

Plotosus tandanus, *Mitchell, Three Expeditions into the Interior of Eastern Australia*, 2nd edit. i. p. 95. pl. 6. fig. 2 (bad).

B. 9. 1 D. 1/6. 2 D.+C.+A. 142. P. 1/10. V. 12.

Head and body compressed; the height of the body is not much less than the length of the head, which is a little more than one-fifth of the total. Head as high as broad, its greatest width being three-fifths of its length; the diameter of the eye is contained five times and a half in the length of the head, twice and a half in that of the snout, and twice in the width of the interorbital space. The nasal barbels are a little shorter than those of the maxillary, and extend to the middle of the eye. The band of teeth of each intermaxillary bone is twice as broad as long; the vomerine teeth are arranged in a semicircular disk; those of the mandibularies form a band which is broadest in the middle; all the teeth of conical form have a brown tip. The first dorsal fin is nearly as high as the body, and its spine more than half as long as the head. Pectoral spine as strong as, but much shorter than, that of the dorsal fin. Uniform blackish brown above.

Rivers of Eastern Australia.

a. Fine specimen. New South Wales. From Mr. Schütte's Collection.
b. Adult: stuffed. Australia. Presented by the Earl of Derby.

2. Copidoglanis obscurus.

1 D. 1/6. 2 D.+C.+A. 226. P. 1/14. V. 15–16.

Head not much compressed, but nearly as high as broad, its width being two-thirds of its length. The height of the body is contained eight times and a half in the total length, the length of the head six times and a third; the diameter of the eye is one-sixth of the height, two-fifths of that of the snout, and three-fifths of the width of the interorbital space. The nasal barbels extend to behind the eye, those of the maxillary to the gill-opening. Each intermaxillary with a triangular band of teeth which is rather broader than long; vomerine band crescent-shaped. All the teeth are white. The first dorsal is placed immediately behind the nape of the neck, and as high as the body; its spine is more than half as long as the head. Pectoral spine as strong as, but shorter than, that of the dorsal fin. Brown; fins with black margin.

Probably from Australia.

a. Seven inches long. From the Collection of the Zoological Society.
?*b*. Young: dried. Freycinet's Harbour. Voyage of the 'Herald.'

3. Copidoglanis albilabris.

Plotosus albilabris, *Cuv. & Val.* xv. p. 427; *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 70, *Prodr. Silur.* p. 319, and *Atl. Ichth. Silur.* p. 99. tab. 96. fig. 1.

? Plotosus albilabris, *Cant. Mal. Fish.* p. 265.
Plotosus macrophthalmus, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Bat.* p. 56.

1 D. 1/4–5. 2 D. + C. + A. 203–216. P. 1/12–13. V. 12–13.

Head nearly as high as broad, its width being two-thirds of its length. The height of the body is one-seventh or one-eighth of the total length, the length of the head one-sixth; the diameter of the eye is one-fourth or one-sixth of the length of the head, and equal to, or two-thirds of, the width of the interorbital space. The nasal barbels extend to, or beyond, the operculum, those of the maxillary being rather shorter. Each intermaxillary with a subquadrangular band of teeth which is about as broad as long; vomerine band crescent-shaped. The first dorsal fin is nearly as high as the body, and the length of its spine is two-fifths of that of the head or equal to that of the spine of the pectoral fin. Lips white.

East Indian Archipelago.

a. Adult. From Dr. P. v. Bleeker's Collection.
b. ? Young: skin: very bad state. Pinang. From Dr. Cantor's Collection.

5. CNIDOGLANIS*.

Plotosus, sp., *Auct.*

A short dorsal in front, with a pungent spine; a second long dorsal is united with the caudal and anal into one fin, pointed behind. Teeth in the upper jaw conical, on the vomer molar-like, in the lower jaw mixed. Barbels eight; nostrils as in *Plotosus*. Cleft of the mouth transverse. Eyes small. The gill-membranes are united below the throat and attached to the isthmus along the entire median line. The second and third branchial arches with a series of long cartilaginous processes, covering the base of the gill-laminæ on the sides facing each other. Ventral fins many-rayed.

Rivers and coasts of Australia.

1. Cnidoglanis megastoma.

Plotosus megastomus, *Richards. Voy. Ereb. & Terr. Fish.* p. 31. pl. 21. figs. 1–3 (from a specimen with mutilated tail).

B. 11. 1 D. 1/4. 2 D. + C. + A. 234. P. 1/9. V. 10.

Head very broad and depressed, its length being one-fifth of the total (with the caudal). Barbels not very long; those of the nostril and maxillary extending somewhat behind the eye. Lower lip broad, pendent, with lobes, the outer of which is situated below the maxillary barbel and has the appearance of a short barbel. The intermaxillary teeth are small, conical, and form two small patches; those of the lower jaw form a broad band, tapering on the side, the outer series of which is formed by conical teeth, the remainder being molar-like. Vomerine teeth in a large triangular patch. Eye small, covered by the skin. Uniform blackish brown above.

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* 1. Plotosus macrocephalus, *Cuv. & Val.* xv. p. 428. pl. 449.—Timor.—This fish appears to be allied to *Cnidoglanis megastoma*, but Valenciennes does not make mention of the peculiar gill-opening which we observe in the latter species.

Australia.

a. Twenty inches long. Sydney Cove. Antarctic Expedition.—Type of the species.
b. Twenty inches long. Sydney. From the Haslar Collection.
c. Adult. Kangaroo Island. From the Collection of the Zoological Society.
d. Young. Australia. Purchased of Mr. Stevens.

2. Cnidoglanis lepturus.

1 D. 1/5. 2 D.+C.+A. 212. P. 1/9. V. 11.

Head depressed, its width being three-fourths of its length, which is one-seventh of the total; tail long, much produced and pointed behind. The nasal and maxillary barbels extend to the end of the head; lower lip not pendent or fringed. Intermaxillary teeth conical, in two small patches; those of the vomer molar-like, in a crescentic band; those of the mandible in two triangular bands, molar-like, with an outer series of conical ones. Eye small. The first dorsal fin is lower than the body and placed at a very short distance from the occiput; its spine is feebly serrated, one-third, or not quite one-third, as long as the head; pectoral spine as long and strong as that of the dorsal fin. Uniform black.

New South Wales.

a. Fourteen inches long. Sydney. From Mr. G. Krefft's Collection.
b. Thirteen inches long: stuffed. Australia. Presented by the Earl of Derby.

3. Cnidoglanis microcephalus.

Plotosus microceps, *Richards. Voy. Ereb. & Terr. Fish.* p. 31. pl. 21. figs. 4–7.

1 D. 1/5. 2 D.+C.+A. 210. P. 1/10. V. 12*.

Head rather depressed, small, its length being one-eighth of the total length. Nasal barbels long, extending to the dorsal fin, which, however, is placed at a short distance from the occiput. Maxillary barbels reaching the gill-opening; lower lip without fringes. The intermaxillary teeth form two triangular patches, those of the vomer a crescent-shaped band. Eye rather small. The first dorsal fin elevated and produced into a long point. Brown, with numerous small, round, whitish spots.

North-west coast of Australia.

a. Type of the species. From Mr. Bynoe's Collection.

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* These numbers are taken from the same (typical) specimen in which they were counted by Sir J. Richardson.

Third Group. CHACINA.

The gill-membranes are confluent with the skin of the broad isthmus, the gill-openings being thereby reduced in extent. The dorsal and anal are divided into two portions: the anterior of the former fin with a strong spine, whilst the posterior of both fins are united with the caudal. Ventrals six-rayed.

East Indies.

6. CHACA.

Chaca, *Cuv. & Val.* xv. p. 444.

Head exceedingly large, broad, and depressed; cleft of the mouth very wide, with the lower jaw prominent, and with bands of villiform teeth in both jaws; no teeth on the palate. Eyes rudimentary. Barbels six, small: one to each angle of the mouth, and two pairs at the lower jaw. Gill-opening rather narrow, not extending to the lower side of the head.

East Indies.

1. Chaca lophioide

Cuv. & Val. xv. p. 445. pl. 451; *Valenc. in Bélang. Voy. Ind. Orient. Zool. Poiss.* pl. 4. fig. 2; ? *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 101. taf. 1. figs. 2–6.

1 D. 1/4. 2 D.+C.+2 A. 25+10+12. 1 A. 10. P. 1/5. V. 6.

Head and body with a few series of short fleshy tentacles.

Bengal. (Borneo , New Guinea?)

a. Adult: stuffed. Nepal. Presented by B. H. Hodgson, Esq.—This specimen is not sufficiently well preserved to enable us to count the fin-rays, and therefore the determination is doubtful.

2. Chaca bankanensis.

Bleeker, Nat. Tydschr. Nederl. Ind. iii. p. 455 & viii. p. 165, *Prodr. Silur.* p. 323, and *Atl. Ichth. Silur.* p. 96. tab. 95. fig. 1.

1 D. 1/3–4. 2 D.+C.+2 A. 22–24+11+11–12. 1 A. 9. P. 1/4. V. 6.

Head and body granular, without tentacles.

Sumatra, Borneo, Banka.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.
b, *c*, *d*. Adult and half-grown. Borneo.

3. Chaca buchanani.

Platystacus chaca, *Ham. Buch.* pp. 140, 374. pl. 28. fig. 43.

1 D. 1/4. 2 D.+C.+2 A. 18+11+8. 1 A. 8. P. 1/5. V. 6.

Head and body with series of short fleshy tentacles; eye surrounded by a ring of small tentacles.

Ganges.

a. Adult. Ganges. From Mr. M'Clelland's Collection.

Second Subfamily.
SILURIDÆ HETEROPTERÆ.

The rayed dorsal fin is very little developed, and if it is present, it belongs to the abdominal portion of the vertebral column; the adipose fin is exceedingly small or absent. The extent of the anal is not much inferior to that of the caudal vertebral column. The gill-membranes overlap the isthmus, remaining more or less separate.

Fourth Group. SILURINA.

The ventral fins are behind or below the dorsal.

Old World.

7. SACCOBRANCHUS.

Saccobranchus, *Cuv. & Val.* xv. p. 399.
Heteropneustes, *Müller.*

Adipose fin none; dorsal very short, without pungent spine, placed above the ventrals; anal very long. Jaws and vomer with bands of villiform teeth; cleft of the mouth transverse, anterior, of moderate width; barbels eight. Eyes rather small. The upper and lateral parts of the head osseous, or covered with a very thin skin. Gill-membranes separated by a deep notch; gill-cavity with an accessory posterior sac, extending backwards between the muscles along each side of the abdominal and caudal portions of the vertebral column. Ventrals six-rayed.

East Indian continent and Ceylon.

1. Saccobranchus singio.

Silurus singio, *Ham. Buch. Fish. Gang.* pp. 147, 374. pl. 37. fig. 46.
Saccobranchus singio, *Cuv. & Val.* xv. p. 400 (pl. 448*).

B. 7. D. 6–7. A. 68–70. P. 1/6. V. 6.

The height of the body is contained seven times and a half in the total length (without caudal), the length of the head (to the end of the operculum) six times and a third. Eye of moderate size, about half as long as the snout. The maxillary barbels extend to, or somewhat beyond, the extremity of the pectorals. The distance of the dorsal fin from the end of the snout is rather less than one-third of the total length (without caudal). Pectoral spine rather strong, its length being three-quarters of that of the head · the ventral fin extends to the third or fourth anal ray. A notch between anal and caudal.

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* This plate may represent a specimen of *S. fossilis.*

Bengal. Cochinchina.

a–b, c–d, e–g. Adult, half-grown, and young. Ganges. Presented by G. R. Waterhouse, Esq.—Types of the species.
h–i. Adult. Calcutta. From the Collection of Messrs. von Schlagintweit.
k. Adult: stuffed. Calcutta. From Mr. Wyllie's Collection.
l. Adult: stuffed. Cochinchina.

2. Saccobranchus fossilis.

? Silurus fossilis, *Bl.* taf. 370. fig. 2; *Bl. Schn.* p. 386.

D. 7. A. 64. P. 1/6. V. 6.

The height of the body is one-seventh of the total length (without caudal), the length of the head (to the end of the operculum) one-sixth. Eye rather small, about one-third as long as the snout. The maxillary barbels extend to the middle or to the extremity of the pectorals. The distance of the dorsal fin from the end of the snout is one-third of the total length (without caudal). Pectoral spine of moderate strength, its length being two-thirds of that of the head. Ventral fin short, reaching to the origin of the anal. Anal and caudal fins scarcely separated by a notch.

Hindostan, Nepal, Khasya.

a. Adult. Delhi. From the Collection of Messrs. von Schlagintweit.
b–d. Half-grown. Khasya. Presented by Sir W. Hooker.
e. Half-grown. Nepal. Presented by B. H. Hodgson, Esq.

3. Saccobranchus microps.

D. 8. A. 70. P. 1/6. V. 6.

The height of the body equals the length of the head, and is one-eighth of the total (without caudal). Eye small, about one-third as long as the snout. Barbels very long; those of the nostril extend to the extremity of the pectoral, those of the maxillary to, or nearly to, the root of the ventral. The band of vomerine teeth is interrupted in the middle. The distance of the dorsal fin from the end of the snout is two-sevenths of the total length (without caudal). Pectoral spine feebly serrated, of moderate strength, its length being two-thirds of that of the head. Ventral fin reaching to the origin of the anal. Anal and caudal fins united. Brown.

Ceylon.

a–c. From 5–6 inches long. Purchased of Mr. Cuming.

4. Saccobranchus microcephalus.

D. 8. A. 74. P. 1/7. V. 6.

The height of the body is one-eighth of the total length, the length of the head one-seventh; eye of moderate size, half as long as the snout. The maxillary barbels extend beyond the middle of the pectoral fin, those of the nostril to the end of the occipital process. The band of vomerine teeth is interrupted in the middle. The distance of the dorsal fin from the end of the snout is contained thrice and a fifth in the total length (without caudal). The pectoral spine is finely serrated along both edges, and as long as the head without snout. Ventral fin reaching to the origin of the anal. A deep notch between anal and caudal fins. Uniform brownish black.

Ceylon.

a. Ten and a half inches long. Presented by Sir Emerson Tennent, F.R.S.

8. SILURUS.

Silurus, sp., *Artedi, Synon.* p. 110.
Silurus et Parasilurus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 114.

One very short dorsal fin, without pungent spine; no adipose fin; the anal terminates close to the caudal, or is continuous with it. Barbels four or six: one to each maxillary, and one or two to each mandible. Palatine teeth none; vomerine teeth in one or two transverse bands. Nostrils remote from each other. Head and body covered with soft skin. The eye is situated above the level of the angle of the mouth. Neck not elevated; the upper profile of the head straight. The dorsal fin is anterior to the ventrals, which are composed of more than eight rays. Caudal rounded.

The species may be subdivided thus:—

* Barbels six: *Silurus*, Blkr., p. 32.
** Barbels four: *Parasilurus*, Blkr., p. 33.

The *Siluri*, as understood by us, inhabit fresh waters of the temperate parts of the Palæarctic region, some of the species approaching or entering the northern portion of the Indian continent.

* Barbels six.

1. Silurus glanis.

Der Wels (der Schaid). Mal (Sweden).
Γλάνις, *Aristot.* ii. c. 13, 15; vi. c. 14; viii. c. 20, 30; ix. c. 37.
Σίλουρος, *Ælian.* xiv. c. 25; *Athen.* vii. 287.
Glanis, *Plin.* ix. c. 43; *Salv.* f. 210 *b*, 211; *Aldrov.* v. c. 5. p. 569; *Jonston*, iii. tit. 2. c. 4. tab. 27. fig. 8; *Bellon. Obs.* i. p. 125.
Silurus, *Plin.* ix. c. 15, 16, 51; v. c. 9; *Auson.* 135; *Rondel.* ii. c. 10. p. 180; *Gesner*, pp. 867, 872, 1047; *Schonev.* p. 69; *Jonston*, tab. 47. fig. 7; *Willughby*, p. 128; *Ray*, p. 70; *Artedi, Synon.* p. 110, and *Genera*, p. 82; *Marsigli, Dan.* iv. c. 4; *Sibbald, Scot. Ill.* p. 25; *Klein, Pisc. Miss.* iv. p. 10. no. 1; *Gronov. Zoophyl.* no. 323. tab. 6. fig. 1.
Silurus glanis†, *L. Syst. Nat.* i. p. 501, and *Faun. Suec.* p. 121; *Retz. Faun.* p. 343; *Bl. Fische Deutschl.* i. p. 242. tab. 34; *Bl. Schn.* p. 379; *Lacép.* v. pp. 56, 59; *Reisinger, Ichth. Hung.* p. 28; *Mei-*

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† Numerous works showing the occurrence of the Wels at certain localities may be found quoted in the elaborate account of the 'Hist. Nat. Poiss.' by Cuv. & Val.

dinger, no. 9; *Pall. Zoogr. Ross.-As.* p. 82; *Cuv. & Val.* xiv. p. 323. pl. 409; *Cuv. Règne Anim. Ill. Poiss.* pl. 96. fig. 1; *Nilss. Skand. Faun.* iv. p. 359; *Gronov. Syst. ed. Gray*, p. 134; *Rapp, Fische Bodensee's*, p. 12.

Mal, *Osbeck, Vet. Akad. Handl.* 1756, p. 34. tab. 3.

Skeleton: *Rosenthal, Ichthyot.* Taf. t. 9. figs. 1–7.

D. 4. A. 90. P. 1/16. V. 12. Vert. 17/51–52.

Maxillary barbels much longer than the head. Pectoral spine indistinctly serrated at its extremity. Vomerine teeth in an uninterrupted band. Anal and caudal broadly united.

European rivers east of the Rhine.

a. Fine specimen. Feder-see. From the Stuttgart Museum.
b. Young: skin. From Gronow's Collection.
c. Adult: skeleton. Feder-see. From Mr. Gerrard's Collection.
d. Young: skeleton. Berlin. From Dr. A. Günther's Collection.
e. Skull of a very large specimen. Berlin. From Dr. A. Günther's Collection.

** Barbels four.

2. **Silurus dauricus.**

Pallas, in Nov. Act. Petropol. 1787, i. p. 359. pl. 11. fig. 11; *Cuv. & Val.* xiv. p. 351.

D. 5. A. 90. P. 1/13. V. 13.

Snout obtuse, depressed, rounded, with the lower jaw prominent. The maxillary barbels extend to the base of the pectoral, and are four times as long as the mandibulary pair. Pectoral spine serrated along its outer edge; anal and caudal confluent. (*Pall.*)

Dauria.

3. **Silurus asotus.**

Silurus asotus, *L. Syst. Nat.* i. p. 501; *Bl. Schn.* p. 378; *Basil. in Nouv. Mém. Soc. Nat. Mosc.* 1855, x. p. 240. tab. 3. fig. 4 (not *C. & V.*).
—— punctatus, *Cant. Ann. & Mag. Nat. Hist.* 1842, ix. p. 485.
—— xanthosteus, *Richards. Voy. Sulph. Fish.* p. 133. pl. 56. figs. 12–14; *Ichth. Chin.* p. 281.
—— sinensis, *Richards. Ichth. Chin.* p. 281 (not *M'Clell.*).
—— japonicus, *Schleg. Faun. Japon. Poiss.* p. 226. pl. 104. fig. 1; *Richards. Ichth. Chin.* p. 281.

D. 5–6. A. 76–82. P. 1/14. V. 13.

Snout obtuse, depressed, rounded, with the lower jaw prominent. The band of vomerine teeth is scarcely interrupted in the middle, and sometimes subcontinuous. Maxillary barbels not twice as long as the head, mandibulary barbels about half as long. Pectoral spine strong, with the outer edge strongly serrated; the length of the pectoral is three-fifths of that of the head. Anal and caudal fins confluent.

China and Japan.

a. Adult. Japan. Purchased of Mr. Frank (*S. japonicus*).
b. Young. Japan. From Dr. P. v. Bleeker's Collection.
c. Fine specimen. Chikiang. From Mr. Fortune's Collection.
d, *e*, *f*–*g*, *h*–*i*. Adult and half-grown. China.

k, l, m. Half-grown. Chusan. From the Collection of the East India Company.—Types of *S. punctatus*.
n. Adult. Formosa. From Mr. Swinhoe's Collection.
o. Half-grown. Moluccas (?).

Some of the specimens show a distinct interruption in the middle of the band of vomerine teeth, whilst in others the bands are confluent. In none of the specimens are the spots described by Cantor visible.

4. **Silurus afghana.**

D. 2. A. 70. P. 1/13. V. 10.

The upper jaw is longer than the lower; snout very obtuse, rounded, with the cleft of the mouth extending to below the eye; the width of the head is three-quarters of its length. The maxillary barbels are twice as long as the head, and thrice as long as those of the mandibles. Eye small. The dorsal fin is quite rudimentary; its distance from the occiput is less than the length of the head. Anal and caudal slightly continuous; caudal rounded. Pectoral obtusely rounded, as long as the head without snout; its spine without distinct denticulations, not quite half as long as the fin. Vomerine teeth in a very narrow, uninterrupted, curved band.

Afghanistan.

a. Five inches long. From Mr. Griffith's Collection.

5. **Silurus cochinchinensis.**

Silurus cochinchinensis, *Cuv. & Val.* xiv. p. 352.

D. 4. A. 62. P. 1/11. V. 10.

Maxillary barbels much longer, mandibulary rather shorter than the head. Pectoral spine scarcely serrated; pectoral fin shorter than the head. Vomerine teeth forming a band, which is a little interrupted in the middle. Anal and caudal close together, but separate. The upper jaw is longer than the lower.

Cochinchina.

a. Fine specimen, 4 inches long.

Silurichthys berdmorei, Blyth, Journ. As. Soc. Beng. xxix. p. 156, is probably identical with this species; the anal is said to be continuous with the caudal, but distinctly defined.

6. **Silurus (?) malabaricus.**

Silurus malabaricus, *Cuv. & Val.* xiv. p. 353.

D. 4. A. 62. P. 1/13. V. 9.

Lower jaw prominent; the anal terminates immediately before the caudal. Pectoral spine strong and serrated; pectoral fin rounded. Vomerine teeth in two separate groups. (*Val.*)

Coast of Malabar.

It is doubtful whether this species belongs to the genus *Silurus*, the short description given by Valenciennes having been taken from specimens in a bad state of preservation.

9. SILURICHTHYS*

Silurichthys, *Bleek. Prodr. Silur.* p. 268.

One very short dorsal fin, without pungent spine; no adipose fin; anal and caudal fins confluent. Barbels four: one to each maxillary and one to each mandible. Palatine teeth none; vomerine teeth in a short transverse band; eyes rather small, above the angle of the mouth. Nostrils remote from each other, subequal in form and width. Head and body covered with soft skin. The upper profile of the head straight. The dorsal fin is inserted above, or immediately before, the ventrals. Ventrals composed of eight or less rays; caudal obliquely emarginate.

East Indian Archipelago Cashmere.

1. Silurichthys phaiosoma.

Bleeker, Prodr. Silur. p. 269, and *Atl. Ichth. Silur.* p. 81. tab. 87. fig. 2.

D. 4. A. 53–56. P. 1/8–10. V. 6–8.

The height of the body is contained six times, or six times and a half, in the total length (without caudal), the length of the head six times and a half to seven times and a fourth. The lower jaw is scarcely shorter than the upper. The mandibulary barbels are shorter than those of the intermaxillaries, the latter extending to the middle third of the anal fin. The pectoral is nearly as long as the head, the length of the spine being equal to the distance between the eye and the angle of the operculum; the spine denticulated posteriorly. Dorsal above the ventrals. Caudal fin obliquely emarginate, with the lobes rounded. Uniform brown; barbels with brown rings.

Banka, Biliton, and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

2. Silurichthys hasseltii.

Bleeker, Prodr. Silur. p. 270, and *Atl. Ichth. Silur.* p. 82. tab. 87. fig. 1.

D. 4. A. 58. P. 1/9. V. 6.

The height of the body is contained six times and a half in the total length (without caudal), the length of the head seven times and two-thirds. Jaws equal anteriorly. The mandibulary barbels are shorter than those of the intermaxillaries, the latter extending to the middle third of the anal fin. The pectoral fin is nearly as long as the head. The dorsal is inserted before the vertical from the ventrals. Caudal obliquely truncated, scarcely emarginate. Brownish, marbled with black. (*Bl.*)

Java (Tysekat).

The single specimen known is in the Leyden Museum.

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* 1. Silurus sinensis (? *Lacép.* v. p. 82. pl. 2. fig. 1), *M'Clell. Calc. Journ.* iv. p. 402.—Chusan.

3. Silurichthys lamghur.

Silurus lamghur, *Heck. Fische Caschmir,* p. 82. tab. 12. figs. 5 & 6.

B. 14. D. 4. A. 53. P. 1/12. V. 1/5.

The height of the body is nearly equal to the length of the head, and contained four times and two-thirds in the total (without caudal). Lower jaw prominent. The maxillary barbels do not extend to the extremity of the pectorals; those of the mandibles about twice as long as the eye. The length of the pectoral is three-quarters of that of the head; the spine serrated, half as long as the fin. Dorsal above the ventrals. (*Heck.*)

Cashmere.

10. WALLAGO.

Wallago, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 114.

One very short dorsal fin, without pungent spine; no adipose fin; the anal is very long, and terminates close to the caudal. Barbels four: one to each maxillary and one to each mandible. Snout rather produced; palatine teeth none; vomerine teeth in two oblique, longish patches. Nostrils remote from each other. Head covered with skin; the eye is situated above the level of the angle of the mouth. Neck not elevated, the upper profile of the head being straight. The dorsal fin is either somewhat before or above the ventrals, which are composed of more than eight rays. Caudal forked.

East Indian rivers.

1. Wallago attu.

Plat-vish, *Nieuh.* p. 273.
Silurus athu, *Bl. Schn.* p. 378. tab. 75.
Wallagoo, *Russell,* fig. 165.
Silurus boalis, *Ham. Buch. Fish. Gang.* pp. 154, 375. pl. 29. fig. 49.
—— wallagoo, *Cuv. & Val.* xiv. p. 354.
—— asotus, *Cuv. & Val.* xiv. p. 358 (not *L.*).
Schilbe boalis, *Sykes, Trans. Zool. Soc.* ii. p. 368. tab. 64. fig. 2.
Silurus mülleri, *Bleek. Verhand. Bat. Genootsch.* xxi., *Silur. Consp.* p. 18.
Wallagoo mülleri, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 585, and *Verhand. Bat. Genootsch.* xxv., *Nalez. Hind. & Beng.* p. 108.
—— russellii, *Bleek. Prodr. Silur.* p. 261, and *Atl. Ichth. Silur.* tab. 86. fig. 1.
—— attu, *Bleek. Atl. Ichth. Silur.* p. 79.

D. 1/4. A. 86–93. P. 1/13. V. 10. Vert. 13/56.

Snout produced, spatuliform; cleft of the mouth very wide, extending to behind the eyes; the lower jaw is rather the longer. Vomerine teeth in two very oblique series, separated from each other by an interspace. Maxillary barbels not quite twice as long as the head; mandibulary barbels as long as the snout. Pectoral spine feeble, not serrated exteriorly; pectoral fin as long as the cleft of the mouth; anal and caudal close together, but separate, sometimes covered with brown dots.

Bengal, Hindostan, Dekkan, Java.

a–b. Half-grown. Ganges.—Types of *S. boalis,* H. B.
c. Adult: stuffed. Calcutta. From Mr. Blyth's Collection.

d–e. Half-grown: stuffed. Ferozepore. From the Collection of the East India Company.

f. Adult: stuffed.

g. Adult. Chittingamadum Tank, South Arcot District, between 11° 50′ and 11° 55′ N. lat., and 79° 18′ and 79° 28′ E. long. Presented by Capt. Mitchell.

h, i. Adult and half-grown. Cavery River. Presented by Capt. Mitchell.

k. Adult. Kotamurdoor Tank, South Arcot. Presented by Capt. Mitchell.

l. Half-grown. Madras Presidency. Presented by Capt. Mitchell.

m. Adult: skeleton. Chittingamadum Tank. Presented by Capt. Mitchell.

2. Wallago leerii.

Bleek. Natuurk. Tydschr. Nederl. Ind. ii. p. 427, and *Atl. Ichth. Silur.* p. 80. tab. 85.

D. 1/4. A. 67–73. P. 1/14–15. V. 10–11.

Snout produced; cleft of the mouth very wide, extending to below the eye; the lower jaw is the longer. The maxillary barbels extend to, or beyond, the origin of the anal fin; mandibulary barbels minute. Pectoral fin considerably longer than the cleft of the mouth; anal separate from caudal. The dorsal fin is inserted above the ventrals.

Rivers of Sumatra, Banka, and Borneo.

11. BELODONTICHTHYS.

Belodontichthys, *Bleek. Prodr. Silur.* p. 266.

One very short dorsal fin, without pungent spine; no adipose fin; the anal terminates close to the caudal, which is forked. Barbels four, one to each maxillary and one to each mandible. The teeth in the jaws are in three series, of unequal size, widely set, slender, and curved; vomerine teeth in a single transverse series; palatine teeth none. Nostrils remote from each other, subequal in width and form. Head covered with skin. Neck elevated, the upper profile of the head being concave; eye above the angle of the mouth. Ventral composed of more than eight rays.

East Indian Archipelago.

1. Belodontichthys macrochir.

Wallago dinema, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 202.

Belodontichthys macrochir, *Bleek. Prodr. Silur.* p. 266, and *Atl. Ichth. Silur.* p. 80. tab. 86. fig. 2.

D. 4. A. 92–96. P. 1/20–22. V. 9–10.

Head compressed, its width being one-half of its length; lower jaw prominent; cleft of the mouth longer than broad · the maxillary barbels extend to, or nearly to, the origin of the anal · those of the mandibles shorter than the eye. Pectorals very large. longer than the head, with a slender smooth spine.

Sumatra and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

12. EUTROPIICHTHYS.

Eutropiichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 107.

A very small adipose fin; a short dorsal fin with a pungent spine; anal fin elongate, terminating at some distance from the caudal, which is forked. Barbels eight. No teeth on the palate. Head covered with skin. The lower jaw is the shorter. Neck not much elevated. The eye is situated above the angle of the mouth. Ventral with six rays.

East Indies.

1. Eutropiichthys vacha.

Pimelodus vacha, *Ham. Buch.* pp. 196, 378. pl. 19. fig. 64.
Bagrus vacha, *Cuv. & Val.* xiv. p. 392.

D. 1/7. A. 50.

Cleft of the mouth long, terminating below the eye; the upper jaw is rather the longer. Barbels not differing much in length from one another, nearly equal to the length of the head. Dorsal and pectoral spines moderately strong, serrated. The ventral is inserted below the hinder part of the dorsal. (*H. B.*)

Bengal.

13. CRYPTOPTERUS.

Kryptopterus, Kryptopterichthys, Micronema, Phalacronotus, Hemisilurus, sp., *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 116.

Dorsal fin quite rudimentary or entirely absent; no adipose fin; the anal fin is very long, and terminates close to, or is continuous with, the caudal, which is deeply forked. Two or four barbels: one to each maxillary, and generally another pair on the chin, on a level with the angles of the mouth; the mandibulary barbels are frequently minute, almost microscopic, and consequently are sometimes entirely absent. Palatine teeth none; vomerine teeth in a short transverse band, which is generally not interrupted in the middle. Head covered with skin; mandibles without enlarged muciferous cavities. Ventrals small and short, composed of from six to ten rays. Posterior nostrils not dilated, and not closer together than the anterior. Eyes generally large, always behind, or even partly below, the level of the cleft of the mouth. Air-bladder transparent through the sides of the body.

East Indies.

Dr. v. Bleeker considers the presence or absence of a rudimentary dorsal filament to be a character of sufficient importance to base on it two divisions—*Kryptopterini* and *Phalacronotini*—an opinion which I cannot share. Nor does it appear to me that the disappearance of two microscopic barbels at the chin is of any systematic value. These barbels are so rudimentary, that they were overlooked in some instances by Dr. Bleeker himself. Thus, for instance, some of the species of *Kryptopterichthys* and all of *Phalacronotus*, two genera said to be distinguished by the absence of mandibulary barbels, are provided with them.

We divide the species into the following groups, to which we do not attribute generic value:—

I. Anal separate from caudal.

A. Maxillary and mandibulary barbels well developed, p. 39.

1. C. mononema. 2. C. limpok.

B. Maxillary barbels well developed, much longer than the head; mandibulary barbels minute, if present, p. 40.

3. C. amboinensis. 5. C. schilbeides. 7. C. macrocephalus.
4. C. palembangensis. 6. C. bicirrhis. 8. C. laïs.

C. Maxillary barbels short; mandibulary barbels short, if present (see *C. hexapterus*).

a. Head and snout short, p. 42.

9. C. micropus. 10. C. micronema. 11. C. hexapterus.

b. Head and snout longish, p. 43.

12. C. micropogon. 13. C. bleekeri. 14. C. leptonema.

II. Anal united with caudal: *Pterocryptis*, Peters, p. 44.

15. C. gangeticus.

I. Anal separate from caudal.

A. Maxillary and mandibulary barbels well developed.

1. Cryptopterus mononema.

Silurus mononema, *Bleek. Verh. Bat. Genootsch.* xxi., *Nieuwe Bydr. Silur. Java*, p. 8.
Kryptopterus mononema, *Bleek. Prodr. Silur.* p. 287, and *Atl. Ichth. Silur.* p. 87. tab. 91. fig. 1.

B. 10–11. D. 2. A. 76–79. P. 1/14. V. 8.

The length of the head is contained seven times and two-fifths in the total (without caudal); the diameter of the eye is one-fourth of the length of the head. Nape of the neck slightly concave. Jaws equal in length; cleft of the mouth twice as broad as long. The maxillary barbels extend to the second fourth of the anal those of the mandibles to the base of the ventrals. Pectoral fin longer than pectoral spine, nearly as long as the head; the latter scarcely denticulated. Dorsal a little in advance of the ventrals.

Java.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

2. Cryptopterus limpok.

Silurus limpok, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 583.
Kryptopterus limpok, *Bleek. Prodr. Silur.* p. 286, and *Atl. Ichth. Silur.* p. 87. tab. 91. fig. 2.

B. 11–12. D. 2. A. 76–88. P. 1/14. V. 8–9.

The length of the head is contained six times and a half to six times and four-fifths in the total (without caudal); the diameter of the eye is one-third or two-sevenths of the length of the head. Nape of the neck very concave. Cleft of the mouth twice as broad as long. The maxillary barbels extend to the posterior quarter of the anal, those of the mandibles far beyond its origin. Pectoral fin longer, pectoral spine rather shorter than the head; the latter strong, denticulated interiorly. Dorsal above the ventrals.

Sumatra and Borneo.

a. Type of the species. From Dr. v. Bleeker's Collection.

This species appears to have the place behind the head, where the air-bladder is seen through the transparent skin, of a dark colour during life.

B. Maxillary barbels well developed; mandibulary barbels minute, if present.

3. **Cryptopterus amboinensis.**

D. 1. A. 63. P. 1/10. V. 6.

The height of the body is contained nearly five times in the total length (without caudal), the length of the head six times and a half. Nape of the neck not elevated. The single rudiment of a dorsal fin is situated a little before the vertical from the base of the ventral. The eye is situated near to the lower profile of the head, and its diameter is one-third of the length of the head. Cleft of the mouth twice as broad as long. The maxillary barbels extend to the end of the pectoral; mandibulary barbels minute. The pectoral is much longer than the head, and extends to the seventh anal ray; its spine is rather shorter than the head, and distinctly denticulated along its inner edge; ventral very short, as long as the eye. Caudal forked to its base, each lobe nearly as long as the pectoral. A minute porus axillaris. Coloration uniform; sides silvery.

Amboyna.

a. Fine specimen, 4½ inches long. Amboyna. Purchased of Mr. Stevens.

4. **Cryptopterus palembangensis.**

Silurus palembangensis, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 584.
Kryptopterichthys palembangensis, *Bleek. Prodr. Silur.* p. 290, and *Atl. Ichth. Silur.* p. 88. tab. 90. fig. 3.

B. 8–9. D. 1–2. A. 61–70. P. 1/11–12. V. 6.

The height of the body is contained from thrice and a third to thrice and three-quarters in the total length (without caudal), the length of the head from five times and two-thirds to six times. The rudiment of a dorsal fin is situated above the base of the ventral. Nape of the neck slightly concave. The eye is situated near to the lower profile of the head, and its diameter is one-third of the length of the head. Cleft of the mouth twice as broad as long, with the jaws equal in front. Vomerine teeth in a short, uninterrupted band. The maxillary barbels extend nearly to, or somewhat beyond, the end of the pectoral. The mandibulary barbels are so minute, that they can only be detected with the utmost caution. The pectoral is much longer than the head, its length being one-fourth of the total (without caudal); it extends to the thirteenth anal ray; its spine is not shorter than the head, and slightly denticulated along its inner edge; ventral very short, as long as the eye. Caudal forked to its base, the lobes shorter than the pectoral. A small porus mucosus in the axil of the pectoral. Coloration uniform; sides silvery.

Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.—This specimen has very minute barbels.

b. Six inches long. From Dr. P. v. Bleeker's Collection.—This specimen has been received from Dr. P. v. Bleeker as *C. bicirrhis*, from which it differs in its higher body, in the length of the pectoral spine, in the presence of a porus axillaris, &c.

5. **Cryptopterus schilbeides.**

Hemisilurus schilbeides, *Bleek. Prodr. Silur.* p. 297, and *Atl. Ichth. Silur.* p. 94. tab. 90. fig. 4.

B. 9–10. A. 65–67. P. 1/12. V. 6?

The height of the body is contained thrice and three-fourths to four times and a fourth in the total length (without caudal), the length of the head six times and a half or seven times. Nape of the neck deeply concave. The diameter of the eye is two-fifths of the length of the head. The maxillary barbels extend to the origin of the anal; pparently no mandibulary barbels. Pectoral fin longer than the head, with the spine slightly denticulated. The band of vomerine teeth is interrupted in the middle.

Sumatra and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

6. **Cryptopterus bicirrhis.**

Silurus bicirrhis, *Cuv. & Val.* xiv. p. 367. pl. 411; *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 20, and *Nat. Tydschr. Nederl. Ind.* i. p. 271.

Kryptopterichthys bicirrhis, *Bleek. Prodr. Silur.* p. 292, and *Atl. Ichth. Silur.* p. 89. tab. 90. fig. 1.

B. 11. D. 1. A. 53–56. P. 1/12. V. 7.

The height of the body is contained four times and three-fifths to four times in the total length (without caudal), the length of the head six times to six times and a half. Nape of the neck not elevated. Cleft of the mouth twice as broad as long. The maxillary barbels extend scarcely to the origin of the anal; (mandibulary barbels absent?). Pectoral spine rather shorter than the head, not denticulated. No porus mucosus in the axil of the pectoral fin.

Java, Sumatra, and Borneo.

7. **Cryptopterus macrocephalus.**

Kryptopterichthys macrocephalus, *Bleek. Prodr. Silur.* p. 293, and *Atl. Ichth. Silur.* p. 89. tab. 89. fig. 2.

B. 9. D. 1. A. 52–53. P. 1/10. V. 6.

The height of the body is contained four times and two-thirds in the total length (without caudal), the length of the head nearly five times. Nape of the neck not elevated. The maxillary barbels extend to the second third of the anal; mandibulary barbels minute. Cleft of the mouth less than twice as broad as long. Pectoral fin not longer than the head, with the spine scarcely denticulated. Dorsal fin a little in advance of the ventrals.

Sumatra?

a. Type of the species: not good state. From Dr. P. v. Bleeker's Collection.

Bleeker has overlooked the mandibulary barbels in this species; they are minute.

8. **Cryptopterus laïs.**

Silurus laïs, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 428.
Kryptopterichthys laïs, *Bleek. Prodr. Silur.* p. 291, and *Atl. Ichth. Silur.* p. 88. tab. 90. fig. 2.

B. 8–9. D. 1–4. A. 58–66. P. 1/10–11.

The height of the body is contained three times and three-fourths or four times in the total length (without caudal), the length of the head five times and a half to six times and a third. Nape of the neck slightly concave. The maxillary barbels extend to, or nearly to, the middle of the anal; mandible apparently without barbels. Pectoral fin much longer, pectoral spine shorter than the head; the latter without denticulations. Dorsal above the ventrals.

Borneo.

a. Three inches long: not good state. From Dr. P. v. Bleeker's Collection.

C. Maxillary barbels short; mandibulary barbels short, if present.

a. Head and snout short.

9. **Cryptopterus micropus.**

Silurus cryptopterus, *Bleek. Nat. Tydschr. Nederl. Ind.* i. p. 270.
Kryptopterus micropus, *Bleek. Prodr. Silur.* p. 84, and *Atl. Ichth. Silur.* p. 86. tab. 89. fig. 3.

B. 10–11. D. 0–2. A. 64–72. P. 1/13–15. V. 6–7.

The length of the head is contained five times and a third to six times and a fourth in the total (without caudal); the diameter of the eye is one-third of the length of the head; the lower jaw is the shorter; the cleft of the mouth is not quite twice as broad as long. The maxillary barbels extend scarcely to the base of the pectoral; those of the mandibles are minute, scarcely visible. Pectoral fin much longer than, pectoral spine as long as, or even longer than, the head; the latter scarcely denticulated.

Sumatra and Borneo.

a. From Dr. P. v. Bleeker's Collection.
b–h. Adult, half-grown, and young. Siam. Purchased of Mr. Jamrach.
i. Adult. Purchased of Mr. Frank.

10. Cryptopterus micronema.

Silurus micronemus, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 18.
—— phalacronotus, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 429.
Micronema typus, *Bleek. Prodr. Silur.* p. 300, and *Atl. Ichth. Silur.* p. 91. tab. 92. fig. 2, tab. 93. fig. 1.
Phalacronotus micruropterus, *Bleek. Prodr. Silur.* p. 307.
Micronema phalacronotus, *Bleek. Enumer.* p. 139.

B. 14. A. 85–93. P. 1/12–14. V. 9.

The height of the body is contained four times and a half in the total length (without caudal), the length of the head five times and two-thirds; the diameter of the eye is one-fifth of the latter. Nape of the neck concave. Lower jaw slightly prominent; the vomerine band occupies the whole width of the palate. The maxillary barbels extend to the eye, those of the lower jaw are minute. Pectorals not much shorter than the head, with the spine slightly denticulated.

Java, Sumatra, and Borneo.

a, *b*, *c*. Types of the species. From Dr. P. v. Bleeker's Collection.

11. Cryptopterus hexapterus.

Silurus hexapterus, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 203.
Micronema hexapterus, *Bleek. Prodr. Silur.* p. 301, and *Atl. Ichth. Silur.* p. 91. tab. 92. fig. 1.

B. 12–13. A. 74–83. P. 1/16–17. V. 8.

The height of the body is contained five times and three-fourths to five times and a third in the total length (without caudal), the length of the head six times and a half to seven times and a fifth; the nape of the neck concave; the diameter of the eye is one-fifth or one-sixth of the latter. Lower jaw strongly prominent; vomerine band short. The maxillary and mandibulary barbels are sometimes shorter, sometimes rather longer than the head. Pectoral rather longer than the head, with the spine short and not denticulated.

Java, Sumatra, and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

b. Head and snout longish.

12. Cryptopterus micropogon.

Silurus apogon, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 67.
Phalacronotus micropogon, *Bleek. Prodr. Silur.* p. 306, and *Atl. Ichth. Silur.* p. 92. tab. 94. fig. 1.

B. 14–17. A. 78–91. P. 1/14–15. V. 9–10.

Only one pair of barbels, extending to the eye. The height of the body is contained six times and a third or seven times in the total length (without caudal), the length of the head four times and three-fifths to five times and a third; the depth of the head is less than one-half of its length; the diameter of the eye is one-fourth or one-sixth of the length of the head. Lower jaw prominent. Pectorals shorter than the head, with the spine slender and slightly denticulated. The length of the lower caudal lobe is three-quarters of that of the head.

Borneo and Sumatra.

a. From Dr. P. v. Bleeker's Collection.

13. **Cryptopterus bleekeri.**

Micronema bleekeri, *Bocourt.*

B. 14. A. 77–78. P. 1/14. V. 9.

Maxillary barbels short, extending to the anterior margin or to the middle of the eye; mandibulary barbels minute, scarcely visible. The height of the body is contained six times in the total length, the length of the head four times and two-thirds; the depth of the head is equal to one-half of its length; the diameter of the eye is one-fifth or one-sixth of the length of the head. Lower jaw prominent. Pectorals shorter than the head, with the spine slender and obtusely denticulated. Caudal fin rather short, its length being equal to the distance of the pupil from the opercular margin.

Siam.

a. Young. From Dr. v. Bleeker's Collection.
b. Ten inches long. Siam. Purchased of Mr. Jamrach.

14. **Cryptopterus leptonema.**

Silurus leptonema, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 584.
Phalacronotus leptonema, *Bleek. Prodr. Silur.* p. 304, and *Atl. Ichth. Silur.* p. 92. tab. 94. fig. 2.

B. 16. A. 75. P. 1/14. V. 9.

One pair of barbels only, extending to the eye. The height of the body is contained five times and two-thirds in the total length (without caudal), the length of the head five times; the depth of the head is more than one-half of its length; the diameter of the eye is one-fifth of the length of the head. Lower jaw prominent. Pectoral rather shorter than the head, with the spine slightly denticulated; the length of one of the caudal lobes is three-quarters of that of the head.

Sumatra.

II. Anal united with caudal.

15. **Cryptopterus gangeticus.**

Pterocryptis gangetica, *Peters, Monatsber. Berl. Acad.* 1861, p. 712.

B. 12. D. 2. A. 75. P. 1/12. V. 10.

The height of the body is contained nine times and a half in the total length (with the caudal), the length of the head nearly seven times. The maxillary barbels do not quite extend to the pectorals, those of the mandible reach to the margin of the gill-membrane. (*Pet.*)

Ganges.

14. CALLICHROUS[†].

Silurus, subgenus Callichrous sp., *Ham. Buch. Fish. Gang.* p. 149.
Silurodes et Pseudosilurus, *Bleek. Prodr. Silur.* p. 255.
Silurodes et Callichrous, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 115.

One very short dorsal fin, without pungent spine; no adipose fin; the anal terminates close by the caudal, or is continuous with it; caudal forked. Barbels four: one to each maxillary and one to each mandible, the latter being placed at some distance behind the symphysis. The lower jaw is the longer. Palatine teeth none. Nostrils remote from each other, subequal in form and width. Head covered with skin; eye behind, and partly below the cleft of the mouth. Ventral composed of eight or less rays.

East Indies.

The species may be divided into two groups:—

* The vomerine band of teeth interrupted in the middle: *Callichrous*, Blkr., p. 45.

** The vomerine teeth in an uninterrupted band: *Silurodes*, Blkr., p. 48.

* The vomerine band of teeth interrupted in the middle.

1. Callichrous bimaculatus.

Witvisch, *Nieuhof, Zee- en Lant-reize*, p. 276.
? Silurus bimaculatus, *Bl.* viii. p. 24. taf. 364; *Bl. Schn.* p. 377; *M'Clell. Calc. Journ. Nat. Hist.* iv. p. 401.
Ompok siluroides, *Lacép.* v. p. 50, vi. tab. 1. fig. 2 (very bad).
Silurus bimaculatus, *Cuv. & Val.* xiv. p. 360.
Pseudosilurus bimaculatus, *Bleek. Prodr. Silur.* p. 277.
Phalacronotus siluroides, *Bleek. Prodr. Silur.* p. 304.
Callichrous bimaculatus, *Bleek. Atl. Ichth. Silur.* p. 84. tab. 87. fig. 3[‡].

D. 4. A. 57–66. P. 1/12–14. V. 7–8.

The anal fin terminates close to the caudal, but is separate from it; the pectoral is rather shorter than the head; its spine is as long as the head behind the eye, and denticulated towards its extremity. The height of the body is somewhat more than the length of the head, which is contained four times and a half to four times and two-thirds in the total length (without caudal); the diameter of the eye is one-fifth or one-seventh of the length of the head. Lower jaw strongly prominent; the vomerine teeth are in two very narrow transverse bands, separated by an interspace; the maxillary barbels extend to, or nearly to, the origin of the anal fin. A blackish blotch *above the pectoral, remote from the head.*

Java, Sumatra, and Borneo.

a. Fine specimen. From Dr. P. v. Bleeker's Collection.

[†] 1. Pseudosilurus macrophthalmus, *Blyth, Journ. As. Soc. Beng.* xxix. p. 156. —Tenasserim.

[‡] In this figure the angle of the mouth is distorted and too much depressed; naturally, it is never below the eye.

2. Callichrous ceylonensis.

D. 4. A. 66. P. 1/14. V. 8.

Dorsal fin very slender, as long as the head without snout; the anal fin terminates close to the caudal, but is separate from it; caudal fin deeply forked, with the lobes pointed, somewhat shorter than the head. The pectoral is obtusely rounded, shorter than the head, and extends to the origin of the anal fin; its spine is rather slender, serrated interiorly, three-fifths of the length of the head. The height of the body is contained four times and two-thirds in the total length (without caudal), the length of the head five times; the greatest width of the head equals its length without snout; snout obtuse, rounded, with the lower jaw prominent; vomerine teeth in two distant, short, and narrow bands. The maxillary barbels extend to the seventh anal ray; those of the mandible very slender, half as long as the head. The diameter of the eye is one-fifth or one-sixth of the length of the head, and one-third of the width of the interorbital space. Brownish olive, minutely dotted with brown; a blackish blotch *immediately behind the gill-opening.*

Ceylon.

The largest specimen is $7\frac{1}{2}$ inches long.

a, b–c. Fine specimens. Purchased of Mr. Cuming.

3. Callichrous chechra.

Silurus chechra, *Ham. Buch. Fish. Gang.* p. 152.
? Silurus microcephalus, *Cuv. & Val.* xiv. p. 365.
Silurus indicus, *M'Clell. Calc. Journ.* ii. p. 583.
Schilbe pabo, *Sykes in Trans. Zool. Soc.* ii. p. 367 (not *Ham. Buch.*).
Wallago microcephalus, *Bleek. Verh. Bat. Gen.* xxv., *Hindost.* p. 110.

D. 4. A. 70. P. 1/14. V. 8.

Dorsal fin exceedingly narrow; the anal terminates close to the caudal, but is separate from it; the pectoral extends to the origin of the anal, and is rather shorter than the head; its spine is serrated along its inner edge, of moderate strength, and two-thirds of the length of the head, which is less than the height of the body, and contained five times and three-fourths in the total length (without caudal). The diameter of the eye is one-fifth of the length of the head. The lower jaw strongly prominent; vomerine teeth in two separate bands of moderate width; the maxillary barbel extends to the end of the pectoral. Sides silvery; the blackish spot is somewhat remote from the head, if distinct.

River Kusi; Dukhun; Sindh; Afghanistan.

a–b. Eight and a half to nine and a half inches long. Dukhun. From Col. Sykes's Collection.—Types of *Schilbe pabo,* Sykes.

c. Adult: not good state. Madras Presidency. Presented by Capt. Mitchell.

d. Half-grown. Sindh. From the Collection of Messrs. v. Schlagintweit.

e. Young. Afghanistan. From Mr. Griffith's Collection.

f. Half-grown: bad state. India. Presented by General Hardwicke.

4. Callichrous pabda.

Silurus pabda, *Ham. Buch.* pp. 150, 374. tab. 25. fig. 47.

D. 4. A. 54. P. 1/12. V. 8.

The height of the body is a little less than one-fourth of the total length (without caudal). The lower jaw is the longer; the maxillary barbels extend to the second third of the anal fin, those of the mandible are shorter than the head. Pectoral spine slender, smooth; anal not united with caudal. Body with irregular darker spots; a blackish blotch behind the gill-opening. (*H. B.*)

Bengal.

Vomerine teeth in two distinct patches (according to Bleeker, Nederl. Tydschr. Dierk. 1863, p. 115).

5. Callichrous anastomus.

? Silurus anastomus, *Cuv. & Val.* xiv. p. 363. pl. 410.
Wallago anostomus, *Bleek. Verh. Bat. Genootsch.* xxv., *Hindost.* p. 109.

B. 12–13. D. 4. A. 50–52. P. 1/11–12. V. 8.

The height of the body is nearly equal to the length of the head, and one-fifth of the total (with the caudal). The diameter of the eye is one-fifth or one-sixth of the length of the head. The vomerine teeth form two separate, narrow, transverse bands. The maxillary barbels extend to the anal, those of the mandible to behind the orbit. Pectorals shorter than the head; their spine is serrated, and equal in length to the distance of the orbit from the end of the operculum. Anal not united with the caudal. A blackish spot behind the gill-opening. (*Bl.*)

Hooghly.

6. Callichrous liacanthus.

Wallago leiacanthus, *Bleek. Nat. Tydschr. Nederl. Ind.* v. p. 189.
Pseudosilurus leiacanthus, *Bleek. Prodr. Silur.* p. 281.
Callichrous leiacanthus, *Bleek. Atl. Ichth. Silur.* p. 85. tab. 89. fig. 2*.

D. 4. A. 54–57. V. 7–8.

The height of the body is contained five times and a third to four times and three-fourths in the total length (without caudal), the length of the head five times to five times and two-thirds. The diameter of the eye is one-sixth or one-seventh of the length of the head. Neck elevated. the upper profile obliquely descending, straight. The lower jaw is the longer; the vomerine teeth form a narrow band, interrupted in the middle. The maxillary barbels extend to the second fifth of the anal fin; those of the mandibles are about as long as the head. Pectorals a little longer than the head, with a slender spine, which is not denticulated, and equal in length to the distance between eye and angle of the operculum. The anal is united with the base of the caudal. Sometimes a blackish spot behind the gill-opening.

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* This figure is not very accurate, the cleft of the mouth being produced backwards to below the eye, whilst in truth the eye is always behind the angle of the mouth, even when the latter is opened. The anal and caudal also are entirely disconnected in the figure, which does not agree with our specimen or with Dr. Bleeker's description.

Sumatra and Banka.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

7. **Callichrous canio.**

Silurus canio, *Ham. Buch.* pp. 151, 374.
—— duda, *Ham. Buch.* pp. 152, 375.
—— mysoricus, *Cuv. & Val.* xiv. p. 364; *M'Clell. Calc. Journ.* iv. p. 402.

D. 4. A. 69–73. P. 1/12. V. 8.

The maxillary barbels extend nearly to the middle of the fish; pectoral spine not denticulated. Vomerine teeth in an interrupted band. Sides immaculate. (*H. B.*)

North-eastern Bengal, Mysore, and Chusan.

8. **Callichrous pabo.**

Silurus pabo, *Ham. Buch.* pp. 153, 375. tab. 22. fig. 48.

D. 5. A. ca. 73. P. 1/16. V. 8*.

The height of the body is contained four times and a third in the total length (without caudal); pectoral spine denticulated interiorly; the anal terminates at a short distance from the caudal. Barbels short, those of the maxillaries scarcely extending beyond the eye; the lower jaw is the longer; vomerine band interrupted in the middle. (*H. B.*)

Brahmaputra.

** The vomerine teeth in an uninterrupted band.

9. **Callichrous hypophthalmus.**

Silurodus hypophthalmus, *Bleek. Prodr. Silur.* p. 272, and *Atl. Ichth. Silur.* p. 83. tab. 88. fig. 2.

D. 4. A. 76–82. P. 1/12. V. 7.

Dorsal fin exceedingly narrow; the anal terminates close to the caudal, but is separate from it; the pectoral extends to the ninth anal ray and is not shorter than the head, the length of which is contained five times and two-fifths to six times in the total. Pectoral spine of moderate strength, two-thirds of the length of the head, slightly denticulated at its inner edge. The diameter of the eye is one-fourth of the length of the head. The lower jaw is the longer; vomerine teeth in a very narrow, uninterrupted band; the maxillary barbel extends to the anterior portion or to the middle of the anal. A blackish spot behind the gill-opening.

Java and Sumatra.

a. Adult. From Dr. P. v. Bleeker's Collection.
b. Seven inches long. Purchased of Mr. Frank.

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* Hamilton Buchanan states ten ventral rays in the text, whilst the figure represents eight only; the latter appears to me to be the correct number.

10. Callichrous macronema.

Silurus macronema, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 203.
Silurodes macronema, *Bleek. Prodr. Silur.* p. 273, and *Atl. Ichth. Silur.* p. 83. tab. 88. fig. 1.

D. 4. A. 79. P. 1/15. V. 8.

The height of the body is contained five times in the total length (without caudal), the length of the head five times and a third; lower jaw strongly prominent; vomerine teeth in a narrow, uninterrupted band. The maxillary barbels extend nearly to the caudal, those of the mandibles are shorter than the head. Pectorals as long as the head, with the spine slender and scarcely denticulated. The anal is not united with the caudal.

Bandjermassing.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

15. SCHILBE.

Schilbe, sp., *Cuv. Règne Anim.*
Schilbe, *Bleek. Prodr. Silur.* p. 255.

One short dorsal fin with a pungent spine; no adipose fin; the anal terminates close to the caudal, which is forked. Barbels eight: one to each maxillary, one to each posterior nostril, and two to each mandible, the latter being placed one behind the other. The palatine teeth are present, and form together with those of the vomer a horseshoe-like band. Nostrils remote from each other, the posterior wider than the anterior. Head covered with skin. Neck elevated, the upper profile of the head being concave; eye behind, and partly below the cleft of the mouth. Ventral composed of six or seven rays.

Tropical Africa.

1. Schilbe uranoscopus.

Schilbe uranoscopus, *Rüppell, Fortsetz. Beschreib. Nil-fische*, p. 4. taf. 1. fig. 1.
—— isidori, *Cuv. & Val.* xiv. p. 375. pl. 412.

D. 1/6. A. 67–71. P. 1/11. V. 6. Vert. $\frac{10-11}{40-39}$.

The height of the body is two-ninths of the total length (without caudal), the length of the head one-fifth; the greatest width of the head is three-fifths of its length. The lower jaw is the longer; the depth of the cleft of the mouth is one-half of its width. Nasal and maxillary barbels of nearly equal length, shorter than the posterior of the lower jaw, which are about one-third as long as the head. The diameter of the eye is one-fifth or one-sixth of the length of the head. The end of the dorsal fin is situated vertically above the root of the ventral, and the width of its base equals that of the latter; its height is less than the length of the head, the length of its spine being two-thirds of the latter; spine finely serrated posteriorly. The anal fin terminates at a short distance from the caudal, which is deeply forked, with pointed lobes. The pectoral spine is stronger than that of the dorsal fin, and terminates at, or close by, the root of the ventral; it is finely serrated along its inner edge. A blackish spot on the origin of the lateral line.

Nile.

a. Adult. Nile. From Dr. E. Rüppell's Collection.—One of the typical specimens.
b–d. Adult and half-grown. Chartoum. From Consul Petherick's Collection.
e. Adult: skeleton. Chartoum. From Consul Petherick's Collection.
f. Adult: skeleton. Nile. From Dr. E. Rüppell's Collection.

2. Schilbe mystus.

Chilby, *Sonnini*, ii. p. 295. tab. 23. fig. 1.
Silurus mystus, part., *L. Syst. Nat.* i. p. 502; *Bl. Schn.* p. 387; *Geoffr. Descript. Eg. Poiss.* pl. 11. fig. 3; *Joannis, Guér. Mag. Zool.* 1835, pl. 12 (not good).
Schilbe intermedius, *Rüpp. Fortsetz. Beschreib. Nil-fische*, p. 6.
—— auratus, *Joannis, l. c.* pl. 5 (not good)*.
—— mystus, *Cuv. & Val.* xiv. p. 372.

B. 9–10. D. 1/6. A. 55–64. P. 1/11. V. 6. Vert. 10/36.

The height of the body is one-fourth of the total length (without caudal), the length of the head one-fifth; the greatest width of the head equals its length without snout. The lower jaw is the longer; the depth of the cleft of the mouth is two-fifths of its width. Nasal barbels shorter than those of the maxillaries, which are half as long as the head; the posterior mandibulary barbels are three or four times as long as the anterior, and somewhat longer than those of the maxillaries. The diameter of the eye is one-sixth of the length of the head. The dorsal fin is situated entirely before the ventral, and the width of its base equals that of the latter; its height is less than the length of the head, the length of its spine being three-quarters of the latter; spine finely serrated posteriorly. The anal fin terminates at a short distance from the caudal, which is deeply forked, with pointed lobes. The pectoral spine is stronger than that of the dorsal fin, and terminates at some distance from the root of the ventral; it is finely serrated along its inner edge. A large blackish blotch on the origin of the lateral line.

Nile.

a, b, c, d, e, f–k. Adult, half-grown, and young. Lower Nile.
l. Half-grown. Nile. From Dr. Rüppell's Collection as *Schilbe intermedius*.
m, n. Half-grown. Chartoum. From Consul Petherick's Collection.

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* M. de Joannis accuses Rüppell of a double error, viz. of having misstated the number of anal rays of *Sch. uranoscopus* and *Sch. auritus*. If the French traveller had had a better knowledge of the German language, he would have seen that Rüppell by no means says that *Sch. uranoscopus* has 64 anal rays, but that *Sch. intermedius* is only similar to *Sch. uranoscopus* in having 64 rays. As regards the other error, it is quite clear that Rüppell intended to compare these two species with *Sch. mystus*, specimens of which have 54 anal rays, and that by a slip of the pen he wrote *auritus* instead of *mystus*.

o. Seven inches long. Chartoum. From Consul Petherick's Collection.—This specimen has swallowed an *Alestes* 5 inches long!
p. Adult: skeleton. Lower Nile. From Mr. S. S. Allen's Collection.

3. Schilbe dispila.

B. 10. D. 1/6. A. 56. P. 1/11. V. 6.

The height of the body is contained four times in the total length (without caudal), the length of the head four times and two-thirds; the greatest width of the head equals its length without snout. The lower jaw is the longer; the cleft of the mouth twice as broad as long. Nasal barbels shorter than those of the maxillaries, which extend to the end of the head; the posterior mandibulary barbels are much longer than the anterior, and are as long as those of the maxillaries. The diameter of the eye is two-ninths of the length of the head. The origin of the dorsal fin is somewhat in advance of that of the ventral, the width of its base being equal to that of the latter; its height is less than the length of the head; its spine is slender, shorter than the first ray, and equal in length to the head without snout; it is finely serrated posteriorly. The anal fin terminates close to the caudal, but is not united with it. Caudal fin forked, with the lobes rounded; the length of the lower lobe is nearly one-seventh of the total. (Pectoral spines broken off, rather strong at the base.) Pectoral fin as long as the dorsal is high. The length of the ventral is one-half of that of the head. Brownish above, silvery on the sides and on the belly; a round black spot on the lateral line between the dorsal and pectoral fins.

West Africa. Upper Nile.

a. Seven inches long. River Niger. From Mr. Fraser's Collection.
b–c. Young. Upper Nile, 500 miles south of Chartoum. From Consul Petherick's Collection.

4. Schilbe hasselquistii.

Silurus schilbe niloticus, *Hasselq. Reise nach Palæst.* p. 419.
Schilbe hasselquistii, *Cuv. & Val.* xiv. p. 377.

B. 9. D. 1/5. A. 63–64. P. $\frac{1}{9-10}$. V. 6.

The upper jaw is longer, or not shorter, than the lower. The length of the head is contained six times and a half in the total; its width is three-fifths of its length. Maxillary barbels half as long as the head. (*Val.*)

Nile.

5. Schilbe senegalensis.

Schilbe senegallus, *Cuv. & Val.* xiv. p. 378.

B. 8. D. 1/5. A. 56–57.

Jaws equal in length anteriorly. The dorsal and anal spines are more slender than in *Sch. mystus*. (*Val.*)

Senegal.

16. EUTROPIUS*.

Eutropius, *Müll. & Trosch. Hor. Ichthyol.* iii. p. 6.

A very small adipose fin; a short dorsal fin with a pungent spine; anal fin long, terminating at some distance from the caudal, which is forked. Barbels eight: one to each maxillary, one to each posterior nostril, and two to each mandible; the mandibulary barbels are placed one behind the other. The palatine teeth are present, and form together with those of the vomer a horseshoe-like band. Nostrils open, not prolonged into tubes, situated at some distance from each other. Head covered with skin. The upper jaw is the longer (except in *E. depressirostris*). Ventral with six rays.

Tropical Africa. East Indies.

1. Eutropius niloticus.

Hypophthalmus niloticus, *Rüpp. Neue Nilfische*, p. 6. taf. 1. fig. 1.
Bagrus schilbeides, *Cuv. & Val.* xiv. p 389.

B. 9. D. 1/6. A. 58–60. P. 1/9. V. 6.

The height of the body is contained nearly four times in the total length (without caudal), the length of the head five times and a half. The greatest width of the head equals its length without snout. The upper jaw is the longer; cleft of the mouth twice as broad as deep. Nasal and anterior mandibulary barbels short; maxillary barbels much longer than the posterior of the mandibles, not extending to the base of the pectoral. The diameter of the eye is one-fifth or one-sixth of the length of the head. The dorsal fin is situated entirely before the ventral, the width of its base being equal to that of the latter. Its height equals the length of the head; spine slender, serrated posteriorly. The anal fin terminates at some distance from the caudal. Caudal deeply forked, with the lobes pointed. Pectoral spine rather broad, strongly serrated, terminating at a rather considerable distance from the ventral. A blackish spot at the origin of the lateral line.

Nile.

a, *b*, *c*, *d*, *e–f*. Adult and young. Lower Nile.
g, *h–i*. Adult and half-grown. Chartoum. From Consul Petherick's Collection.
k. Adult. Egypt. From Dr. E. Rüppell's Collection.—One of the typical specimens.
l. Adult: skeleton. Nile. Presented by G. Macleay, Esq.

2. Eutropius congensis.

Silurus congensis, *Leach, in Tuckey, Narrat. Exped. Zaire,* p. 409; *Owen, Osteolog. Cat. Coll. Surg.* i. pp. 24, 27.

B. 10. D. 1/6. A. 58. P. 1/11. V. 6.

The height of the body is contained four times and a third in the total length (without caudal), the length of the head five times and a half. The greatest width of the head is three-quarters of its length. The upper jaw is considerably longer than the lower; cleft of the mouth twice as broad as deep. Barbels short and very thin: those of the maxillary are the longest, extending to the end of the head, and twice as long as the posterior mandibulary barbels; the latter rather longer than nasal barbels; anterior mandibulary barbels shorter than the eye. Eye covered with a broad circular fold of skin; its diameter is one-sixth or one-seventh of the length of the head. The ventrals are situated below the hinder half of the dorsal: the bases of both fins are equal in width. Dorsal fin elevated, with a slender spine, slightly serrated posteriorly, and considerably longer than the head; the first ray is produced into a filament. The anal terminates at some distance from the caudal, which is deeply forked, the length of a lobe being nearly one-sixth of the total. Adipose fin very small. Pectoral fin elongate, like the dorsal; its spine is slightly serrated towards its extremity, rather stronger than, but as long as, the dorsal spine; its first ray produced into a filament; this fin extends beyond the origin of the anal. Teeth in the jaws and on the palate villiform in broadish bands; the band on the vomer transverse, more or less confluent with those on the palatines. Sides silvery.

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* 1 Hypophthalmus taakree. *Sykes, Trans. Zool. Soc.* ii. p. 369. tab. 64. fig. 4. —Dekkan.

River Congo.

a. Thirteen inches long.—Type of the species.

3. **Eutropius obtusirostris.**

D. 1/5. A. 54. P. 1/8. V. 6.

The height of the body is contained four times and a third in the total length (without caudal), the length of the head four times and two-thirds. The greatest width of the head is three-fifths of its length. Upper jaw considerably longer than the lower; cleft of the mouth short, not extending beyond the front margin of the orbit. The nasal barbel and the anterior of the mandibulary barbels are short and thin; the maxillary barbel as long as the head, the hinder mandibulary barbel more than half as long. Eye without adipose eyelid; its diameter is somewhat less than one-third of the length of the head. The dorsal fin is situated entirely before the ventral; its spine is serrated posteriorly, and three-fourths as long as the head. The anal fin terminates at some distance from the caudal, which is deeply forked, the length of a lobe being contained five times and a half in the total. The pectoral spine is strongly serrated interiorly, stronger than, and as long as, that of the dorsal fin, terminating at some distance from the ventral. Ventral fin half as long as the pectoral. Vomerine teeth in an uninterrupted transverse band, not continuous with the palatine teeth. Silvery, back dark olive.

India.

a–b. Three inches long.

4. Eutropius adansonii.

Bagrus adansonii, *Cuv. & Val.* xiv. p. 391. pl. 414.

A. 53. Dorsal and anal spines rather feeble. (*Val.*)
Senegal.

5. Eutropius (?) murius.

The Muri Vacha.
Pimelodus murius, *Ham. Buch. Fish. Gang.* pp. 195, 378.

D. 1/8. A. 42. P. 1/11. V. 6.

Vomerine and palatine teeth? Barbels not longer than the head; upper jaw a little longer than the lower; eyes large; dorsal spine nearly smooth. Silvery, caudal fin blackish. (*H. B.*)

Four inches long. Mahananda River.

6. Eutropius depressirostris.

Bagrus depressirostris, *Peters, Monatsber. Acad. Wiss. Berlin*, 1852, p. 682.

B. 10. D. 1/6. A. 56–60. P. 1/10–11.

The lower jaw is not shorter than the upper when the mouth is closed; the hinder mandibulary barbels equal in length to those of the maxillaries. The dorsal fin is situated entirely before the ventral; its spine is slender and serrated posteriorly.

Mozambique.

a. Adult. Presented by Prof. Peters.

17. HEMISILURUS.

Hemisilurus, sp., *Bleeker, Prodr. Silur.* p. 295.

Dorsal fin none; the anal fin terminates close to the caudal, which is deeply forked. Two small barbels on the upper jaw. Palatine teeth none; vomerine teeth in two separate patches. Head covered with skin; neck elevated, the upper profile of the head being concave. Eye lateral, its lower margin being on the same level with the cleft of the mouth. The upper jaw is the longer. Head compressed, snout not broader than deep. The mandible with large mucous cavities (as in a Sciænoid). Ventrals composed of eight or nine rays.

East Indian Archipelago.

1. Hemisilurus heterorhynchus.

Wallago heterorhynchus, *Bleek. Nat. Tydschr. Nederl. Ind.* v. p. 514.
Hemisilurus heterorhynchus, *Bleek. Prodr. Silur.* p. 296, and *Atl. Ichth. Silur.* p. 94. tab. 93. fig. 2.

B. 12–13. A. 90–93. P. 1/16–17. V. 9.

The height of the body is contained four times and three-fifths to five times in the total length (without caudal), the length of the head nearly six times; the diameter of the eye is one-fourth or one-fifth of the length of the head. The barbels are fleshy, flexible, and extend to the eye; pectoral about as long as the head, with the spine slender and slightly denticulated.

Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

2. Hemisilurus scleronema.

Bleeker, Atl. Ichth. Silur. p. 93. tab. 101.

B. 10. A. 103. P. 1/15–16. V. 8.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head seven times and a quarter. Barbels cartilaginous, rigid, much shorter than the eye. Pectoral about as long as the head, with the spine slender and slightly denticulated.

Java.

The single specimen known is in the Leyden Museum.

18. SILURANODON.

Silurus, sp., *Cuv. & Val.*
Siluranodon, *Bleek. Prodr. Silur.* p. 255.

One short dorsal fin without pungent spine; no adipose fin; the anal fin terminates close by the caudal, which is forked. Barbels eight: one at the nostrils, one to each maxillary, and four behind the chin, the roots of the latter being nearly in the same transverse series. No teeth in the jaws or on the palate. Eyes behind and below the angle of the mouth. Neck not elevated. Ventral composed of six rays.

Nile.

1. Siluranodon auritus.

Oued denne (*of the Arabs*).
Silurus auritus, *Geoffr. Descr. Eg. Poiss.* pl. 11. figs. 1 & 2; *Cuv. & Val.* xiv. p. 368.

B. 9. D. 5. A. 80. P. 1/9. V. 6. Vert. $\frac{9-10}{46-45}$.

The nasal and maxillary barbels are shorter than those on the chin, which are one-third or one-fourth longer than the head. Pectoral spine rather strong, serrated, and nearly as long as the first ray. Silvery.

Nile.

19. AILIA.

Ailia, (*Gray*) *Cuv. & Val.* xv. p. 538.

Adipose fin exceedingly small; no other dorsal fin *. The anal fin terminates at a short distance from the caudal, which is deeply forked. Barbels eight: one between the nostrils, one to each maxillary, and four immediately behind the chin, the roots of the latter being nearly in the same transverse series. Teeth in the jaws villiform; teeth on the vomer minute, in two separate small patches. The nostrils of one side are close together, open, the anterior being quite in front of the snout. Head covered with thin skin. Upper jaw rather longer than the lower Orbit with a broad circular eyelid, behind the angle of the mouth. Ventral composed of six rays.

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* There is a small hole in the skin where the dorsal fin ought to have been placed; it is at a short distance from the occiput, and a little before the vertical from the ventral fins.

Bengal.

1. Ailia bengalensis.

Malapterurus coila, *Ham. Buch. Fish. Gang.* pp. 158, 375.
Silurus (Acanthonotus) cuvieri, *Gray, Illustr. Ind. Zool.* (very bad; from a deteriorated specimen).
Malapterus (Ailia) bengalensis, *Gray, Illustr. Ind. Zool.*
Ailia bengalensis, *Cuv. & Val.* xv. p. 538; *Bleek. Verh. Batav. Genootsch.* xxv., *Beng. & Hind.* p.

A. 70–72. P. 14.

All the barbels are subequal in length, extending to about the middle of the length of the fish. The pectoral spine is slender, nearly as long as the head, the length of which is one-sixth of the total (without caudal). The height of the body is one-fifth of the total.

Bengal.

a–b. Types of the species. Ganges. Presented by G. R. Waterhouse, Esq.
c–d. Half-grown. Calcutta. From the Collection of Messrs. v. Schlagintweit.

2. Ailia affinis.

A. 60–61. P. 13.

Nasal and maxillary barbels subequal in length, extending to, or nearly to, the middle of the length of the fish; mandibulary barbels rather shorter. The pectoral spine is very slender, as long as the head, the length of which is one-sixth of the total (without caudal). The height of the body is more than one-fifth of the total length (without caudal). Otherwise very similar to *A. bengalensis.*

Himalayas, Assam.

a–b. Four inches long. Kulu. From the Collection of Messrs. v. Schlagintweit.
c. Three and a quarter inches long. Assam. From the Collection of the East India Company.

20. SCHILBICHTHYS.

Schilbe, sp., *Cuv. & Val.*
Schilbeichthys, *Bleek. Prodr. Silur.* p. 255.

One short dorsal fin with a pungent spine; no adipose fin; the anal fin terminates at some distance from the caudal, which is forked. Barbels eight, as in *Ailia.* Vomerine and palatine teeth present. Nostrils close together, at the end of the snout, very wide, the posterior twice as wide as the anterior. Head covered with skin. The upper profile is nearly straight; neck not elevated; upper jaw longer than the lower; orbit with a broad anterior and posterior adipose eyelid, behind the cleft of the mouth. Ventral composed of six rays.

Bengal.

1. Schilbichthys garua.

Silurus garua, *Ham. Buch. Fish. Gang.* pp. 156, 375. tab. 21. fig. 50.
Schilbe garua, *Cuv. & Val.* xiv. p. 379. pl. 413 (not good); *Bleek. Verh. Bat. Gen.* xxv., *Hindost.* p. 110.

B. 7. D. 1/6. A. 30. P. 1/11. V. 6.

The maxillary barbels extend to the base of the ventral, those of the chin to the end of the head. Vomerine teeth in an uninterrupted cross-band, scarcely separated from the palatine bands. Dorsal spine slender, strongly serrated. Silvery on the sides, immaculate.

Bengal.

a. One of the typical specimens. Ganges. Presented by G. R. Waterhouse, Esq.
b. Sixteen inches long: stuffed. India. From Capt. Boys's Collection.

21. LAÏS.

Laïs, *Bleek. Prodr. Silur.* p. 170.

Adipose fin minute; a short dorsal fin with a pungent spine and with seven soft rays; anal fin elongate, with forty or more rays. Barbels six, four of which are at the mandible, in a transverse series behind the symphysis. Teeth on the palate villiform, forming two more or less contiguous transverse bands. The upper jaw is the longer. Eyes large, free, behind, and partly below the angle of the mouth. Caudal forked; ventral rays six. Nostrils close together, at the end of the snout, wide, the posterior twice as wide as the anterior.

East Indian Archipelago.

The natural affinity between *Laïs* and *Schilbichthys* is so great, that these two genera offer one of the most striking proofs that the presence or absence of a small adipose fin is a character entirely useless for the establishment of higher than generic groups of Siluroid fish, and, if taken by itself, that it leads to a not less artificial system than the presence or absence of teeth on the palate. Thus, we see that in Dr. v. Bleeker's system *Laïs* and *Schilbichthys* are referred to two distinct subfamilies—the former to the "*Bagriformes*."

1. Laïs hexanema.

Pangasius hexanema, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 589.
Laïs hexanema, *Bleek. Prodr. Silur.* p. 171, and *Atl. Ichth. Silur.* p. 72. tab. 75. fig. 2.

B. 8–9. D. 1/7. A. 40–42. P. $\frac{1}{9\text{–}10}$.

Occipital process very narrow · the diameter of the eye is one-third of the length of the head; the maxillary barbels extend to the ventral or to the anal, those of the mandible to the base of the pectoral. Dorsal fin lower than the body; its spine is slender, slightly serrated behind, and two-thirds of the length of the head; pectorals as long as the head, with a spine which is longer than that of the dorsal.

Java, Sumatra, Borneo.

a. Adult. From Dr. P. v. Bleeker's Collection.

22. PSEUDEUTROPIUS*.

Pseudeutropius, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 106.

A very small adipose fin; a short dorsal fin with a pungent spine; anal fin elongate, terminating at some distance from the caudal, which is forked. Barbels eight: one to each maxillary, one between the nostrils of each side, and four along the front margin of the lower jaw; the teeth on the palate form a more or less uninterrupted curved band. Nostrils open, not prolonged into tubes, transverse-ovate; the posterior nearer to each other than the anterior. Eye large, situated behind, and partly even below the angle of the mouth. The lower jaw is the shorter. Ventral with six rays.

East Indies.

1. Pseudeutropius brachypopterus.

Eutropius brachypopterus, *Bleek. Prodr. Silur.* p. 169, and *Atl. Ichth. Silur.* p. 71. tab. 75. fig. 1†.

B. 10. D. 1/6. A. 27. P. 1/8. V. 6.

The barbels are nearly equally long, extending to, or near to, the extremity of the pectoral fin. The vomerine teeth form a very narrow band, which is angularly bent, and continuous with the palatine teeth. The dorsal fin is scarcely lower than the body, and the length of its spine is three-quarters or four-fifths of that of the head; the spine is serrated along its whole posterior side, and anteriorly at its extremity. Pectoral fin nearly as long as the head; its spine is serrated posteriorly. Ventral fins half as long as the head. Silvery, with three indistinct brownish longitudinal bands.

Palembang (Sumatra).

a. Type of the species. From Dr. P. v. Bleeker's Collection.

2. Pseudeutropius atherinoides.

Silurus atherinoides, *Bl.* viii. p. 48. taf. 371. fig. 1; *Bl. Schn.* p. 386.
Pimelodus angius, *Ham. Buch. Fish. Gang.* pp. 180, 377. pl. 29. fig. 59.

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* 1. Eutropius macrophthalmus, *Blyth. Journ. As. Soc. Beng.* xxix. p. 156.—Tenasserim.
2. Bagrus buchanani, *Val. in Jacq. Voy. Ind. Orient. Atl. Poiss.* pl. 16. fig. 3.—Hindostan.

† This figure is slightly inaccurate in representing an anterior and posterior pair of mandibulary barbels, whilst in reality the roots of the four barbels are in a perfectly straight line.

Pimelodus urua, *Ham. Buch.* pp. 177, 377.
Bagrus atherinoides, *Cuv. & Val.* xiv. p. 396.
—— angius, *Cuv. & Val.* xiv. p. 393.
—— urua, *Cuv. & Val.* xiv. p. 395.
—— exodon, *Bleek. Verh. Bat. Gen.* xxv., *Hindost.* p. 111 (not *Val.*).

D. $\frac{1}{5-6}$. A. 36. P. 1/7. V. 6.

The length of the head is contained four times and a third in the total (without caudal); the greatest width of the head is somewhat more than one-half of its length; the upper jaw is longer than the lower. The maxillary barbels extend to the origin of the anal fin, the nasal barbels to the end of the head; those of the mandibles are inserted anteriorly at the chin, and rather longer than the head. The eye is situated behind the angle of the mouth, and partly at the lower side of the head; its diameter is one-third of the length of the head. The dorsal spine is rather slender, obscurely serrated behind. Caudal fin with the lobes pointed; the distance between anal and caudal fins is less than the depth of the hinder portion of the tail. Pectoral spine much stronger than that of the dorsal fin, two-thirds as long as the head, extending beyond the dorsal spine, and armed interiorly with strong spines curved backwards. Ventral inserted below the hinder dorsal rays, not half as long as the head. Silvery, with three or four more or less distinct bands, formed by black dots; a black spot at the base of the caudal.

Bengal.

a. Three inches long. Bengal. From the Collection of the East India Company.
b. Three inches long. Bengal. Presented by G. R. Waterhouse, Esq.

3. Pseudeutropius mitchelli.

D. 1/6. A. 37. P. 1/7.

The length of the head is a little more than the height of the body, and one-fifth of the total (without caudal); the greatest width of the head is somewhat more than one-half of its length; the upper profile of the head is scarcely concave, the nape being but little elevated. The upper jaw is longer than the lower; the maxillary barbels extend to the ventrals, those of the nostrils and of the mandible to the end of the head. The occipital process is not covered by skin; it is slender, and joins the basal bone of the dorsal fin, which is triangular, and half as long as the occipital process; a fonticulus along the middle of the upper side of the head, extending to the base of the occipital process. Eye large, one-third of the length of the head. The distance between occiput and dorsal fin is nearly equal to that between occiput and snout. Dorsal spine slender, two-thirds of the length of the head, finely serrated behind. The distance between anal and caudal fins is rather less than the depth of the hinder portion of the tail. Pectoral spine much stronger than that of the dorsal fin, as long as the head without snout, not extending backwards to the vertical from the dorsal spine; it is armed interiorly with strong spines curved backwards. Ventral inserted below the hinder dorsal rays, half as long as the head. Sides uniform silvery.

Madras Presidency.

a–b. Three and a half inches long. Presented by Captain Mitchell.

4. Pseudeutropius megalops.

B. 5. D. 1/6. A. 41. P. 1/11. V. 6.

The height of the body is one-sixth of the total length (without caudal), the length of the head one-fifth; the greatest width of the head is three-fifths of its length. The upper jaw overlaps the lower; the cleft of the mouth is two-thirds as long as broad. The teeth in the jaws form rather narrow bands,—those of the vomer two quadrangular patches, which are separated from each other by a linear groove; the palatine teeth form a cuneiform band which is subcontinuous with the vomerine teeth. The nasal barbels extend to behind the eye; those of the maxillaries are slightly compressed, and situated below the orbit and base of the pectoral, when in repose, and extend beyond the origin of the anal. The mandibulary barbels are inserted immediately behind the front margin of the lower jaw, nearly in the same transverse line, and are of equal length, extending beyond the root of the pectoral. The eye is situated behind the angle of the mouth. and partly at the lower side of the head; it is provided with a broad eyelid, and its diameter is one-fourth of the length of the head. The dorsal fin is situated entirely before the ventral; its height is less than the length of the head, and its spine is not much shorter than the first soft ray; the spine is of moderate strength, finely serrated in front and behind. The distance between anal and caudal fins is more than the depth of the hinder part of the tail. Caudal fin with the lobes pointed, its length being one-fifth of the total. Pectoral spine stronger than that of the dorsal fin, as long as the head, extending to, or nearly to, the ventral, finely serrated exteriorly and interiorly. Ventral small, not quite half as long as the head. Silvery, dark on the back; a blackish spot corresponds to the seat of the air-bladder.

Central India.

a. Six inches long. Godaveri at Mahadespur, Orissa. From the Collection of Messrs. v. Schlagintweit.

5. Pseudeutropius longimanus.

D. 1/8. A. ca. 54. P. $\frac{1}{?8}$. V. 6.

The bands of teeth in the jaws are rather narrower than those on the palate; the vomerine band is interrupted in the middle, each half being subcontinuous with the palatine band. The nasal barbels are half as long as the head; those of the maxillaries extend to, or beyond, the origin of the anal; the four mandibulary barbels are inserted in a straight transverse line, and as long as, or longer than, the head.

The eye is rather large, and situated behind the angle of the mouth and partly at the lower side of the head. The ventral fin is inserted below the posterior rays of the dorsal fin. The dorsal spine is serrated behind and granulated in front; its length is four-fifths of that of the head. The anal fin terminates at some distance from the caudal, which is deeply forked. Pectoral spine stronger, and a little longer, than that of the dorsal fin, serrated interiorly and granulated exteriorly, extending beyond the root of the ventral; ventral small, two-fifths of the length of the head. Silvery, dark olive above.

a. Skin: 6 inches long: not good state. India. From the Collection of the Zoological Society.

6. Pseudeutropius goongwaree.

Hypophthalmus goongwaree, *Sykes, in Trans. Zool. Soc.* ii. p. 369. tab. 64. fig. 3.

D. 1/6. A. 52. P. 1/9. V. 6.

All the barbels are longer than the head; the maxillary barbels extend beyond the origin of the anal fin; mandibulary barbels in a transverse line. Eye rather large, situated behind the angle of the mouth and partly at the lower side of the head. Dorsal and pectoral spines serrated behind. The anal fin terminates at some distance from the caudal, which is deeply forked. Ventral small. Silvery, olive above. (*Sykes.*)

Mota Mola River, Dekkan.

Bagrus exodon (Cuv. & Val. xiv. p. 394; Bélang. Voy. Ind. Orient. Zool. p. 385. pl. 4. fig. 1) appears to be closely allied to the above species. Valenciennes says that it is "notablement caractérisée par ses dents intermaxillaires, adhérentes à de larges plaques au bout du museau, de manière à dépasser entièrement la mâchoire inférieure." A. 43–46.—Bengal.

23. PANGASIUS*.

Pangasius, *Cuv. & Val.* xv. p. 45.

Pangasius et Pseudopangasius, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 107.

Adipose fin very short; a short dorsal fin with a pungent spine and with seven soft rays; anal fin elongate, with about thirty rays. Barbels slender, four: one at each maxillary, and two immediately behind the symphysis of the mandibles. Palatine teeth separate from those of the vomer. The upper jaw is the longer. Eyes free. Anterior nostrils open, quite in front of the snout. Caudal forked; ventral rays six.

East Indies.

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* 1. Pangasius delicatissimus, *Bleek. Atl. Ichthyol.* i. p. 73.—Known from a figure only, and apparently distinguished by a pearl-coloured longitudinal dorsal stripe.—Java.

1. Pangasius buchanani.

Pimelodus pangasius, *Ham. Buch.* pp. 186, 378. pl. 33. fig. 52.
Pangasius buchanani, *Cuv. & Val.* xv. p. 45. pl. 425; *Bleek. Verhand. Batav. Genootsch.* xxv., *Hindost.* p. 118.

B. 9–10. D. 1/7. A. 31. P. 1/11.

Head granulated above; the occipital process is not quite twice as long as broad at the base. Snout obtusely rounded. Barbels shorter than the head; dorsal and pectoral spines serrated, the latter as long, or nearly as long, as the head.

Ganges.

a–b. Three feet long: stuffed. Ganges.

2. Pangasius djambal.

Bleeker, Verhand. Batav. Genootsch. xxi., *Silur. Batav.* p. 21; *Prodr. Silur.* p. 181; and *Atl. Ichth. Silur.* p. 73. tab. 76.

B. 9. D. 1/6. A. 30–32. P. 1/12–13.

Scarcely different from *P. buchanani*. Head granulated above; the occipital process is more than twice as long as broad at the base. Snout obtusely rounded. Barbels shorter than the head. Dorsal and pectoral spines serrated, shorter than the head.

Java.

a. Fine specimen. From Dr. P. v. Bleeker's Collection.

This specimen has the vomerine teeth, which are represented by Dr. P. v. Bleeker as forming two separate patches, confluent into one, without the slightest trace of a median division. This is another proof that Bleeker's *Pseudopangasius* is not entitled to a place in the system.

3. Pangasius macronema.

Bleeker, Nat. Tydschr. Nederl. Ind. i. p. 11; *Prodr. Silur.* p. 183; and *Atl. Ichth. Silur.* p. 74. tab. 75. fig. 3.

B. 10–11. D. 1/7. A. 31–33. P. 1/12.

The height of the body is two-ninths or one-fourth of the total length (without caudal), the length of the head two-ninths or one-fifth. Head covered with smooth skin above; snout obtusely rounded. The diameter of the eye is about one-third of the length of the head. The maxillary barbels extend to, or beyond, the end of the pectorals, those of the mandible beyond their base. The teeth on the palate are small, villiform, and form four small separate patches. The dorsal fin is lower than the body; its spine is of moderate strength, serrated, three-fourths of the length of the head. Pectorals scarcely shorter than the head, with their spine as long as that of the dorsal fin.

Borneo and Java.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

4. Pangasius rios.

Bleeker, Nat. Tydschr. Nederl. Ind. ii. p. 205; *Prodr. Silur.* p. 184; and *Atl. Ichth. Silur.* p. 74. tab. 79. fig. 1.

B. 9. D. 1/7. A. 33. P. 1/13–14.

The height of the body is contained five times to four times and a quarter in the total length (without caudal), the length of the head five times. Head covered with smooth skin above; snout obtusely rounded; the diameter of the eye is about one-third of the length of the head. The length of the barbels is less than one-half of that of the head. The teeth on the palate form four small separate patches. Dorsal fin lower than the body; its spine is of moderate strength, shorter than the head, and serrated. Pectorals scarcely shorter than the head, their spine being rather longer than that of the dorsal fin. (*Bl.*)

South Borneo.

a. Type of the species: very bad state. From Dr. P. v. Bleeker's Collection.

b. Adult. From Dr. P. v. Bleeker's Collection.

5. Pangasius micronema.

Bleeker, Verhand. Batav. Genootsch. xxi., *Silur. Jav.* p. 8; *Prodr. Silur.* p. 185; and *Atl. Ichth. Silur.* p. 75. tab. 77. fig. 2.

B. 9. D. 1/7. A. 29. P. 1/11–12.

The height of the body is a little more than the length of the head, which is rather less than one-fifth of the total (without caudal). The occipital process is covered with smooth skin, or longitudinally striated. The maxillary barbels extend to, or nearly to, the opercles, those of the mandible being as long as the eye. The teeth on the palate form four longish patches arranged in a crescent. Dorsal fin lower than the body; its spine is of moderate strength, serrated, two-thirds or five-sixths of the length of the head. Pectorals scarcely shorter than the head, with their spine rather longer than that of the dorsal fin.

Java.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

6. Pangasius nasutus.

Pseudopangasius nasutus, *Bleek. Versl. Kon. Akad. Wet.* xv. p. 72, and *Atl. Ichth. Silur.* p. 76. tab. 29. fig. 1.

B. 9. D. 1/7. A. 29. P. 1/11. V. 6.

Snout pointed, with the upper jaw projecting. The maxillary barbels are not much longer than those of the mandible, and extend to the base of the pectorals. The vomerine teeth form a band, which is more than twice as broad as long, and separate from the oblong palatine patches. The soft dorsal fin is as high as the body; its spine is strong, two-thirds of the length of the head, and serrated behind. Pectorals shorter than the head. The mucous cavity in the axil of the pectoral has a very large opening, divided by reticulated crossbars into smaller foramina.

Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

. Pangasius juaro.

Pangasius polyuranodon, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 425. and *Prodr. Silur.* p. 186.
—— juaro, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 589.
Pseudopangasius polyuranodon, *Bleek. Atl. Ichth. Silur.* p. 76. tab. 78.

B. 7–9. D. 1/7. A. 35–39. P. 1/12–13.

Snout rounded, obtuse. The maxillary barbels extend somewhat beyond the head, those of the mandible being as long as the eye. Vomerine teeth in a quadrangular patch, which is but little broader than long, and separate from the oblong palatine patches. The soft dorsal is lower than the body; its spine is of moderate strength, serrated behind, and rather shorter than the head; pectorals nearly as long as the head.

Sumatra and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

24. HELICOPHAGUS.

Helicophagus, *Bleek. Act. Soc. Sc. Indo-Neerl.* iii., *Sumatra,* vi. p. 49.

Adipose fin very small; a short dorsal fin with a pungent spine and with seven soft rays; anal fin elongate, with about thirty rays. Barbels slender, four: one at each maxillary, and two behind the symphysis of the mandibles. Teeth on the palate villiform, in two small separate patches, if present. The upper jaw is the longer. Eyes with a free orbital margin. Nostrils on the upper side of the snout, the posterior being more remote from each other than the anterior. Caudal forked; ventral rays six.

East Indian Archipelago.

1. Helicophagus typus.

Bleeker, Act. Soc. Sc. Indo-Neerl. iii., *Sumatra,* vi. p. 46; *Prodr. Silur.* p. 176: and *Atl. Ichth. Silur.* p. 78. tab. 79. fig. 2.

B. 9. D. 1/7. A. 29. P. 1/13.

The humeral process is pointed behind; the maxillary barbels extend to the hind part of the pectoral, those of the mandible to the opercles. Vomerine teeth minute, in two extremely small patches, if present. Dorsal spine strong, serrated, three-quarters of the length of the head· pectoral spine strong, scarcely longer than that of the dorsal fin.

Sumatra.

a Type of the species. From Dr. P. v. Bleeker's Collection.

2. Helicophagus waandersii.

Bleeker, Prodr. Silur. p. 175, and *Atl. Ichth. Silur.* p. 77. tab. 80.

B. 9. D. 1/7. A. 37. P. 1/11.

The humeral process longish, obtusely rounded behind; barbels very short. The vomerine teeth form two small, narrow, divergent patches. Dorsal and pectoral spines strong, serrated, only a little shorter than the head.

Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

25. SILONDIA.

Silundia, *Cuv. & Val.* xv. p. 48.

Adipose fin very short; a short dorsal fin with a pungent spine and with seven (six) soft rays; anal fin elongate, with more than forty rays. Barbels minute, two: one at each maxillary. Teeth on the palate villiform, in a crescentic band. Jaws subequal in length. Eyes with a free orbital margin. The posterior nostrils are closer together than the anterior, which are quite in front of the snout. Caudal forked; ventral rays six.

East Indian continent.

1. Silondia gangetica.

Pimelodus silondia, *Ham. Buch.* pp. 160, 375. tab. 7. fig. 50.
Silundia gangetica, *Cuv. & Val.* xv. p. 49. pl. 426; *Bleek. Verh. Batav. Genootsch.* xxv., *Hindost.* p. 118.
Ageneiosus childreni, *Sykes, Trans. Zool. Soc.* ii. p. 375. tab. 66. fig. 3.

B. 11–12. D. 1/7. A. 42–46. P. 1/12–13.

Teeth in the jaws cardiform, in two irregular series.

Bengal, Dekkan.

a–e. Young: types of the species. Ganges. Presented by G. R. Waterhouse, Esq.

f. Four feet long: stuffed. Ganges.

Third Subfamily.
SILURIDÆ ANOMALOPTERÆ.

The rayed dorsal fin is present, but little developed, and belongs to the caudal portion of the vertebral column · adipose fin exceedingly small. The extent of the anal is not much inferior to that of the caudal vertebral column. The gill-membranes overlap the isthmus, remaining separate to the chin.

South America.

Fifth Group. HYPOPHTHALMINA.

The ventral fins are in front of the dorsal. The anterior vertebræ are not united into one.

26. HELOGENES.

Helogenes, *Günth. Ann. & Mag. Nat. Hist.* 1863, xii. p. 443.

Adipose fin very small; dorsal fin very short, without pungent spine, inserted behind the ventrals; anal very long. The upper jaw is a little longer than the lower. Barbels six. A band of small teeth in the jaws, and two patches on the vomer. No dermal bones. Eye very small, covered over by the skin. Gill-openings very wide, the gill-membranes being entirely separate. Pectorals without pungent spine; ventrals six-rayed.

British Guiana.

1. Helogenes marmoratus.

B. 13. D. 5. A. 42. P. 8. V. 6.

Head small, slightly depressed, short, two-thirds as broad as long, its length being contained five and a half times in the total, without caudal; it is entirely covered with soft skin. Snout broad, obtusely rounded; cleft of the mouth of moderate width, the maxillary extending backwards to below the anterior margin of the eye. The trunk and tail are compressed, with the upper and lower profiles only slightly convex; a longitudinal groove runs along the middle of the back from the nape to the origin of the dorsal fin. The greatest depth of the body is just before the origin of the anal fin, where it is contained four times and a third in the total length (without caudal); the least depth of the tail is about one-half of the greatest depth of the body.

The teeth are minute, cardiform, forming bands in both jaws, the outer series containing somewhat larger and more widely set teeth.

The teeth on the palate form two separate patches, occupying the front of the vomer. The barbels are thin, and of nearly equal length, extending to, or nearly to, the middle of the pectoral fin: one is above and a little in front of the angle of the mouth; the mandibulary barbels are placed one close behind the other, nearly in the vertical from the maxillary barbel. The eye is above the angle of the mouth; there is a groove below the eye.

The dorsal fin is a little behind the middle of the distance between the nape of the neck and the root of the caudal fin; its height is somewhat less than the length of the head. Adipose fin very small, lobuliform. Caudal forked, with the lobes equal in length and pointed; their length is about one-fifth of the total. The anal is very long, with fleshy base, extending to the root of the caudal; its distance from the gill-opening is more than the length of the head. Pectoral as long as the head, extending beyond the base of the ventral fin; the latter reaches slightly beyond the origin of the anal.

Blackish brown, finely marbled with black.

Essequibo.

a–b. Three and a half inches long. Purchased of Mr. Ehrhardt.

27. HYPOPHTHALMUS.

Hypophthalmus, sp., *Spix*.
Hypophthalmus, *Cuv. & Val.* xv. p. 224.
Hypophthalmus and Pseudohypophthalmus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 109.

Adipose fin very small; dorsal fin short, with seven rays, the first of which is slightly spinous; anal very long. The lower jaw is rather the longer. Barbels six, those of the mandible long. Teeth neither in the jaws nor on the vomer; intermaxillaries very feeble. Head covered with skin. Eye of moderate size, situated behind and below the angle of the mouth. Gill-openings exceedingly wide, extending nearly to the symphysis of the mandibles. Air-bladder none. Ventrals small, six-rayed, inserted before the dorsal.

South America.

The gill-opening is exceedingly wide the gill-membranes being scarcely united in front. The gill-rakers are fine, very long, closely set; the first branchial arch has only one row of gill-rakers along its outer margin, the inner margin being lined with a broad membrane; the second, third, and fourth arches have two rows of gill-rakers, the fourth being destitute of lamellæ, and entirely attached to the thorax, without leaving an open slit behind.

1. Hypophthalmus edentatus.

Hypophthalmus edentatus, *Spix*, *Pisc. Bras.* p. 16. tab. 9.
—— spixii, *Cuv. & Val.* xv. p. 231; *Kner*, *Sitzgsber. Wien. Acad.* xxvi. 1858, p. 446.

D. 1/6. A. 72. P. 1/17. V. 7.

The length of the head is rather less than one-fourth of the total length (without caudal). Barbels thin, those of the maxillæ scarcely longer than the head. (*Agass.*)

Northern Brazil.

2. **Hypophthalmus longifilis.**

Cuv. & Val. xv. p. 230.

B. 14. D. 1/6. A. 64–68. P. 1/15. V. 6.

The length of the head is one-fourth of the total length (without caudal). Maxillary barbels longer than the head, extending beyond the dorsal in the young; mandibulary barbels with a narrow fringe along their inner margin. Dorsal spine much more feeble and shorter than the slender pectoral spine, the length of which is one-half of that of the head.

Guiana.

a. Adult. Demerara. Purchased of Mr. Scrivener.
b–c. Adult and half-grown: stuffed. Demerara. Purchased of Mr. Scrivener.
d. Half-grown. Surinam. Purchased of Mr. Frank.

3. **Hypophthalmus marginatus.**

Hypophthalmus marginatus, *Cuv. & Val.* xv. p. 225. pl. 439.
Notophthalmus marginatus, *Hyrtl, Denkschr. Akad. Wiss. Wien,* xvi. 1859, p. 17.

B. 14. D. 1/6. A. 63–68. P. 1/14. V. 6.

The length of the head is two-sevenths of the total (without caudal). Maxillary barbels longer than the head, not extending on to the end of the pectoral; mandibulary barbels compressed, but not fringed. Dorsal spine feeble, half as high as the body; pectoral spine slender. Top of the dorsal and hinder margin of the caudal black. (*Val.*)

Cayenne and Surinam.

4. **Hypophthalmus fimbriatus.**

Kner, Sitzgsber. Wien. Acad. 1858, xxvi. p. 444. fig. 30.

B. 13–14. D. 1/6. A. 67–68. P. 17. V. 6.

The length of the head is one-fourth of the total (without caudal). The maxillary barbels have a narrow fringe, and extend on to the end of the pectoral; mandibulary barbels broadly fringed, the anterior being nearly half as long as the entire fish. Dorsal fin low, the length of its feeble spine being two-fifths of the height of the body. Pectoral spine flexible. (*Kner.*)

Rio Negro.

Fourth Subfamily.
SILURIDÆ PROTEROPTERÆ.

The rayed dorsal fin is always present, short, with not more than twelve soft rays, and belongs to the abdominal portion of the vertebral column, being placed in advance of the ventrals. The adipose fin is always present and well developed, although frequently short. The extent of the anal is much inferior to that of the caudal vertebral column. The gill-membranes are not confluent with the skin of the isthmus, their posterior margin always remaining free, even if they are united with each other. Whenever the nasal barbel is present, it belongs to the posterior nostril.

Sixth Group. BAGRINA.

The anterior and posterior nostrils are remote from each other, and the posterior is provided with a barbel.

a. Teeth on the palate present (BAGRINA). Old World.

28. BAGRUS.

Bagrus, sp., *Cuv. & Val.* xv. p. 388.
Bagrus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 20.

Adipose fin long; a short dorsal with a pungent spine and with nine or ten soft rays; anal fin short, with less than twenty rays. Barbels eight. Teeth on the palate in a continuous band. The upper jaw is the longer. Eyes with a free orbital margin. Caudal forked; ventral with six rays.

Nile.

1. Bagrus bayad.

Silurus bajad, *Forsk.* p. 66; *Bl. Schn.* p. 388.
Bayatte, *Sonnini*, pl. 27 (bad).
Porcus bayad, *Geoffr. Descr. Eg. Poiss.* pl. 15. fig. 1.
Bagrus bayad, *Cuv. & Val.* xiv. p. 397.
? Pimelodus aor, *Cuv. Règne Anim. Ill. Poiss.* pl. 96. fig. 2.

B. 13. D. 1/10. A. 13–14. P. 1/9. V. 6. Vert. 16–17/34*.

The length of the head is contained thrice and three-fourths in the total. Head broader than high, its greatest width being not quite one-half of its length. Snout spatulate, its length being one-third of that of the head; the upper jaw is slightly the longer. The maxillary barbels very long, extending to the middle of the adipose fin. No rugose shield between occiput and dorsal fin. Dorsal spine of moderate strength, half as long as the head, not serrated. The adipose fin commences immediately behind the dorsal, and is twice as long as the latter, and nearly as high as the hinder part of the tail. Caudal deeply forked. Pectoral spine as long and strong as that of the dorsal fin, serrated at the inner side of its extremity; the pectoral fin extends to the vertical from the first soft dorsal ray ventral inserted below the end of the dorsal fin.

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* The united three or four anterior vertebræ are counted as one.

Nile; (Senegal).

a. Fine specimen, 30 inches long. Chartoum. From Consul Petherick's Collection.
b–g. Adult, half-grown, and young. Chartoum. From Consul Petherick's Collection.
h, *i–k*. Adult and half-grown. Lower Nile.
l. Adult: stuffed. Assouan. From Dr. E. Rüppell's Collection.
m–n. Adult: skeletons. Lower Nile.

2. Bagrus docmac.

Silurus docmac, *Forsk.* p. 65; *Bl. Schn.* p. 388.
Bagrus docmac, *Cuv. & Val.* xiv. p. 404.
—— bayad, *Hyrtl, Denkschr. Acad. Wiss. Wien.* 1859, xvi. p. 17 (Hyrtl has evidently confounded this species with *B. bayad*, Forsk.).

B. 13. D. 1/9. A. 13. P. 1/10–11. V. 6. Vert. $\frac{16}{30-31}$.

The length of the head is contained thrice and three-fourths in the total. Head broader than high, its greatest width being two-thirds or three-quarters of its length. Snout spatulate, one-third of the length of the head. The upper jaw is slightly the longer. The maxillary barbel very long, extending to the origin or to the middle of the adipose fin. Head and nape covered with soft skin. Dorsal spine not serrated, of moderate strength, its length being two-fifths of that of the head. The adipose fin commences at a short distance from the dorsal, and is nearly twice as long as the latter, and lower than the hinder part of the tail. Caudal deeply forked. Pectoral spine denticulated along its inner side, as strong as, but rather shorter than, the dorsal spine. The pectoral fin extends to the vertical from the first or second soft dorsal ray; ventral inserted immediately behind the dorsal fin.

Nile.

a–b, *c–f*, *g–k*. Adult, half-grown, and young. Chartoum. From Consul Petherick's Collection.
l, *m–o*, *p–t*. Adult, half-grown, and young. Lower Nile.
u–v. Skeletons of large specimens. Lower Nile.

29. CHRYSICHTHYS.

Chrysichthys et Octonematichthys, *Bleek. Prodr. Silur.* p. 60.
Melanodactylus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 95.

An adipose fin of moderate length; a short dorsal fin with a pungent spine and with six soft rays; anal fin short, with less than twenty rays. Barbels eight. Teeth on the palate in two lateral portions, those on the vomer being confluent with the palatine teeth of each side. Jaws equal in length, or the upper the longer. Eyes with a free orbital margin. Caudal forked; ventral with six rays.

Tropical Africa.

Adult individuals of the species of this genus show the adipose fin finely striated, the striæ being arranged in radiating bundles. This is the commencement of the rayed adipose fin by which the genus *Clarotes* has been characterized.

1. **Chrysichthys auratus.**

Schal-Abou-Réal; Zamar; Xaxoug-roumi.
Pimelodus auratus, *Geoffr. Descr. Eg. Poiss.* pl. 14. figs. 3 & 4.
?? Bagrus auratus, *Cuv. & Val.* xiv. p. 427.
? Bagrus capito, *Cuv. & Val.* xiv. p. 430.

B. 9. D. 1/6. A. 10–11. P. 1/8. V. 6.

The height of the body is two-ninths of the total length (without caudal), the length of the head two-sevenths; head entirely covered with thick soft skin, broader than high, its greatest width being three-fourths of its length. Eye of moderate size, its diameter being one-half of the extent of the snout, and rather less than one-fifth of the length of the head. Snout depressed, very broad, its extent being two-fifths of the length of the head; lips thick; the upper jaw is the longer. Nasal barbels very short, as long as the eye; maxillary barbels longer than those of the mandibles, but shorter than the head. Dorsal spine stout, serrated behind, half as long as the head; the first dorsal ray rather higher than the body. The base of the adipose fin equals in length its distance from the dorsal, and exceeds that of the latter fin. Caudal fin forked. Pectoral spine very strong, longer than that of the dorsal fin, strongly denticulated interiorly. The teeth on the palate are in a horseshoe-like band, interrupted in the middle anteriorly.

Nile.

a. Fine specimen. Nile. From Dr. E. Rüppell's Collection.—This specimen is 8 inches long, without caudal; its head is 26 lines, and its eye 5 lines long.

This is the species figured by Geoffroy St.-Hilaire, the eye being represented in the figure of nearly the correct size; the width of the mouth is also properly shown. Valenciennes appears to have described a second species under the name of *B. auratus*, and it is probable that his *B. capito* was meant for the type figured by Geoffroy.

2. **Chrysichthys macrops.**

? Bagrus auratus, *Cuv. & Val.* xiv. p. 430; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17 (not *Geoffr.*).

D. 1/6. A. 11. P. 1/8. V. 6. Vert. 11/25.

This species is very closely allied to *C. auratus*, but it differs in having the upper side of the head covered with thin skin only, so that portions of the bone are nearly naked and granulated; its eye is considerably larger, the diameter being more than one-fifth of the orbit. The first dorsal ray and the upper caudal lobe are prolonged into filaments.

Upper Nile.

a. Adult. Nile. Presented by Dr. Rüppell.

b–f. Adult and half-grown. Chartoum. From Consul Petherick's Collection.

g. Adult: skeleton. Chartoum. From Consul Petherick's Collection.

The largest of our examples is 7 inches long, without caudal; its head is 24 lines, and its eye 6 lines long; so that a comparison with the measurements given of *C. auratus* will show that the latter species has an absolutely smaller eye.

Although both species are so similar that Dr. Rüppell appears to have considered them identical, yet they would enter two different genera of Dr. v. Bleeker's system.

3. Chrysichthys maurus.

Bagrus maurus, *Cuv. & Val.* xiv. p. 431.

D. 1/6. A. 10–11.

The head is entirely covered with soft skin. The height of the body is nearly one-sixth of the total length (with the caudal), the length of the head one-fifth. The teeth on the palate are in two short, nearly transverse lines. Dorsal spine as high as the body and half as high as the soft rays; pectoral spine strongly serrated. Adipose fin half as long as the anal. Dark-coloured. (*Val.*)

Senegal.

4. Chrysichthys cranchii.

Pimelodus cranchii, *Leach, in Tuckey, Narrat. Exped. Zaire,* p. 409; *Griff. An. Kingd. Fish. Suppl.* pl. 40.
Bagrus nigrita, *Cuv. & Val.* xiv. p. 426. pl. 416.

D. 1/6. A. 13. P. 1/9. V. 6.

The height of the body is one-fifth of the total length (without caudal), the length of the head one-third; head much broader than high, its greatest width being three-quarters of its length. Crown of the head striated; occipital process nearly as long as the basal bone of the dorsal spine, both meeting in the middle of the neck. Snout broad, depressed, spatulate, its length being one-third of that of the head; jaws nearly equal in length. Vomerine teeth in two separate broad patches, each patch being confluent with the band of palatine teeth of its side. Nasal barbels very short and thin, maxillary barbels as long as the head; mandibulary barbels rather short, the outer twice the length of the inner. Dorsal fin as high as the body; its spine is of moderate strength, not serrated, and not quite half as long as the head. Adipose fin considerably shorter than the dorsal; its distance from the dorsal equals twice the length of the base of the latter.

Caudal forked, with the lobes obtusely pointed. Pectoral spine longer and stronger than that of the dorsal fin, serrated along its inner edge. Ventral shorter than pectoral, not extending on to the anal.

Rivers Congo and Senegal.

a. Eight inches long. Congo. From the Congo Expedition.—Type of the species.

5. Chrysichthys nigrodigitatus.

Pimelodus nigrodigitatus, *Lacép.* v. pp. 103, 108.
Arius acutivelis, *Cuv. & Val.* xv. p. 85.
Melanodactylus nigrodigitatus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 95.

D. 1/6. A. 13. P. 1/9.

Snout pointed, with the upper jaw prominent. Teeth on the palate villiform, forming a crescent-shaped band interrupted in the middle. Nasal barbel very short, the maxillary barbel extending to the middle of the opercle. Eye large, two-ninths of the length of the head; its diameter equals the width of the bony parts between the orbits. Occipital process rather narrow, not much longer than the basal bone of the dorsal spine, which is elongate and triangular. Dorsal fin very high; adipose fin short. Caudal very long, deeply forked, with the upper lobe longest and much longer than the head.

West coast of Africa.

a. Fine specimen. Purchased of Mr. Damon.
b. Half-grown. Purchased of Mr. Dalton.

30. CLAROTES.

Clarotes, *Kner, Sitzungsber. Wien. Akad.* xxvi. p. 313.

Adipose fin subdivided into rays, and with a strong spine *in old individuals*; a short dorsal fin with a pungent spine and with six soft rays; anal fin short. Barbels eight; branchiostegal membranes scarcely united below the throat. Vomerine teeth in two transverse bands which are not confluent with the palatine teeth. Eyes with a free orbital margin. Caudal forked; ventral with six rays.

Upper Nile.

This genus is scarcely different from *Chrysichthys*, the division of the adipose fin into rays being dependent on age. In all other respects, except in the unimportant modification of the arrangement of the palatine teeth, *Clarotes* is identical with *Chrysichthys*.

1. Clarotes laticeps.

Abu Mesaeka.
Pimelodus laticeps, *Rüpp. Neue Nil-fische,* p. 7. taf. 1. fig. 2.

B. 9. D. 1/6. A. 12. P. 1/9. Vert. 14/25.

The height of the body is contained from four times and a half to five times and a half in the total length (without caudal), the length of the head thrice and a fourth. Head much depressed, broad, truncated in front, its greatest width being four-fifths of its length; upper jaw overlapping the lower. Nasal barbels slender, not so long as the snout; the maxillary barbels extend to the end of the pectoral, the outer ones of the mandible to the root of the pectoral. The teeth on the palate form four narrow bands of nearly equal length, the vomerine band being interrupted in the middle and not continuous with the palatine band. The upper surface of the head coarsely granulated, the granules being arranged in striæ. Occipital process not much larger than, and similar in shape to, the triangular basal bone of the dorsal spine. Dorsal spine strong, slightly serrated along both edges, more than half as long as the head. Adipose fin short, subdivided into rays only along its upper margin in young individuals; in old specimens the division into rays extends to the base of the fin, and the first ray is changed into a hard, pungent spine. Caudal forked; both lobes equal in length, or the lower rather longer. Pectoral spine as long as, but stronger than, that of the dorsal fin, serrated along both edges, slightly exteriorly and strongly interiorly. Ventral rather shorter than pectoral. Dark grey above, white below; a blackish blotch behind the gill-opening; a broad blackish band along each caudal lobe.

The transformation of an adipose fin into one with rays and spines in this fish is a very curious fact. I have no doubt that very young specimens are provided with a fin without any indication of rays. Rüppell, when he described the species from a young specimen ($4\frac{1}{2}$ inches long), did not observe anything peculiar in its fins. *Clarotes heuglinii* (Kner, l. c. taf. 1 & 2, and Hyrtl, ibid. p. 371, and the latter in Denkschr. Wien. Acad. 1859, xvi. p. 1) is certainly nothing but a deformed specimen of the same species; the arrangement of the granulated plates on the upper surface of the head, as represented by Hyrtl on pl. 2, is exactly the same as in our adult specimen.

The species appears to be peculiar to the Upper Nile, although single specimens, like that described by Rüppell, may be carried down towards the mouth of the river.

a. Fine specimen, 16 inches long. Chartoum. From Consul Petherick's Collection.—The spine of the adipose fin is completely formed.

b. Eight inches long. Chartoum. From Consul Petherick's Collection.—One-half of the adipose fin is transformed into rays.

c-d. Six and seven inches long. Chartoum. From Consul Petherick's Collection.—The division into rays is only visible on the margin of the adipose fin.

31. MACRONES*.

Macrones, *Duméril, Ichthyol. Anal.* p. 484.

Hypselobagrus, Macrones, Hemibagrus, et Aspidobagrus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 96.

Adipose fin long, or of moderate length; a short dorsal with a

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[*] 1. Pimelodus menoda, *Ham. Buch.* p. 203.—Pimelodus corsula, *H. B. Fish.*

pungent spine and with seven soft rays; anal fin short, with less than twenty rays. Barbels eight. Teeth on the palate in a continuous band; no labial teeth. The upper jaw is the longer. Orbit with a free circular eyelid. Caudal forked · ventral with six rays.
Asia.

This genus may be divided into the following groups:—

I. Adipose fin much longer than anal: *Hypselobagrus,* p. 75.
II. Adipose fin not much longer, or shorter than anal.
  A. A separate interneural shield on the nape: *Macrones,* p. 78.
  B. No separate interneural shield: *Hemibagrus,* p. 79.

I. Adipose fin much longer than anal.

1. Macrones aleppensis.

Mystus, *Russell, Hist. of Aleppo,* (ed. Angl.) p. 76. tab. 13. fig. 1; (ed. Leyden) p. 89. tab. 5. fig. 6; *Gronov. Zoophyl. Pisc.* p. 126. n. 388. pl. 8*a*. fig. 6.
Bagrus halepensis, *Cuv. & Val.* xiv. p. 413.

D. 1/7. A. 12. P. 1/8. V. 6.

The height of the body is contained five times and a third in the total length (without caudal) the length of the head four times and a half. Head rather broader than high, its greatest width being three-fifths of its length. Snout somewhat depressed, not very broad, its length being two-fifths of that of the head; the upper jaw is the longer. Nasal barbels small; those of the maxillaries extend to the origin of the adipose fin. Dorsal spine of moderate strength, scarcely serrated behind as long as the head, without snout. Dorsal fin rounded above. The adipose fin commences immediately behind, and is nearly thrice as long as, the dorsal; it is lower than the hinder part of the tail. Caudal fin forked, with the lobes rounded, the upper being the longer. Pectoral spine as long as, but stronger than, that of the dorsal fin, very strongly dentated interiorly. The ventral fin

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Gang. pl. 1. fig. 72 (without description).—Bagrus corsula, *Cuv. & Val.* xiv. p. 408.—Ganges.
2. Silurus erythropterus, *Bl.* tab. 369. fig. 2; *Bl. Schn.* p. 385.—*Habitat* —?
3. —— vittatus, *Bl.* tab. 371. fig. 2; *Bl. Schn.* p. 387.—Bagrus vittatus, *Cuv. & Val.* xiv. p. 413.—Tranquebar.
4. Bagrus trachacanthus, *Cuv. & Val.* xiv. p. 419.—Bengal.
5. —— oculatus, *Cuv. & Val.* xiv. p. 424.—Malabar.
6. —— limbatus, *Richards. Ichth. Chin.* p. 283.—Canton.—The typical specimen is in the Museum of the Philosophical Society of the University of Cambridge.
7. —— aorinus, *Valenc. in Jacquem. Voy. Ind. Poiss.* pl. 17. fig. 1.—East Indies.
8. Pimelodus chandramara, *Ham. Buch.* pp. 162, 375 (description faulty).—Silundia chandramara, *Cuv. & Val.* xv. p. 52.—Batasio chandramara, *Blyth, Journ. As. Soc. Beng.* 1861, xxix. p. 150.—River Atreyi.

is inserted below the end of the dorsal, and does not extend backwards to the origin of the anal.

River Coic (Aleppo).

a. Six inches long: bleached.—One of the typical specimens from A. Russell's Collection.

2. **Macrones cavasius.**

Pimelodus cavasius, *Ham. Buch. Fish. Gang.* pp. 203, 379. pl. 11. fig. 67.
Bagrus cavasius, *Cuv. & Val.* xiv. p. 409; *Jacquem. Voy. Ind. Poiss.* pl. 16. fig. 2; *Bleek. Verh. Bat. Gen.* xxv., *Hindost.* p. 113.
Pimelodus seengtee, *Sykes, Trans. Zool. Soc.* ii. p. 374. tab. 66. fig. 2.

D. 1/7. A. 11. P. 1/8. V. 6.

The height of the body is a little less than the length of the head, and one-fifth of the total (without caudal); head as broad as high, its greatest width being two-thirds of its length; snout scarcely depressed, its extent being rather more than one-third of the length of the head. The upper jaw is the longer; vomerine teeth in a narrow, uninterrupted, crescent-shaped band. The fonticulus on the upper side of the head extends on to the base of the occipital process, and the latter to the basal bone of the dorsal spine. Nasal barbels short, maxillary barbels extending to the anal or caudal fin; mandibulary barbels of unequal length, the outer being longer than the head. The dorsal spine is rather feeble, half as long as the head, smooth, not serrated. The soft dorsal fin with broad base, pointed, the first ray being higher than the body. The adipose fin commences immediately behind the dorsal, and is thrice, or nearly thrice, as long as the latter, and lower than the hinder portion of the tail. Caudal fin deeply forked, with the lobes pointed. Pectoral spine as long as the head without snout, strongly serrated interiorly, extending somewhat beyond the origin of the dorsal. Ventral inserted immediately behind the dorsal, not extending on to the anal. Silvery, the upper part of the dorsal and the maxillary barbel blackish.

Dukhun, Mysore, Pondicherry, Bengal.

a. Six inches long. Dukhun. From the Collection of Colonel Sykes.
b–d. Four and five inches long. India.

3. **Macrones micracanthus.**

Bagrus micracanthus, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 23, and *Prodr. Silur.* p. 161.
Hypselobagrus micracanthus, *Bleek. Atl. Ichth. Silur.* p. 59. tab. 74. fig. 3.

D. 1/7. A. 11–12. P. 1/8–9.

The height of the body is one-fourth or one-fifth of the total length (without caudal), the length of the head one-fourth; head a little broader than high, granulated above. The fonticulus on the upper side of the head does not extend to the base of the occipital process, which is narrow, reaching the basal bone of the dorsal spine. The teeth on the palate form a crescent-shaped band. The nasal barbels extend to the opercles, those of the maxillaries to the tail or to the caudal fin. The dorsal fin is as high as the body; its spine is slender, half as long as the head, and serrated posteriorly; the adipose fin is twice as long as, and commences at some distance from, the dorsal. Pectorals not much shorter than the head, with a very strong spine, which is serrated interiorly, and much longer than that of the dorsal fin; ventrals shorter than pectorals.

Java, Sumatra, Borneo.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

4. Macrones elongatus.

D. 1/7. A. 14. P. 1/10.

The height of the body is one-sixth of the total length (without caudal), the length of the head one-fourth; the greatest width of the head is contained once and a third in its length, its depth once and three-fourths; snout flat, depressed, its length being rather more than one-third of that of the head; head not granulated above; occipital process very short; the teeth on the palate form a subsemicircular band. The nasal barbels extend to the eye, those of the maxillaries to the ventrals, the outer mandibulary barbels to the pectoral. The dorsal fin is as high as the body, not pointed above; its spine is of moderate strength, more than half as long as the head, smooth anteriorly and finely serrated posteriorly; the adipose fin commences at a short distance from, and is thrice as long as, the dorsal; it is lower than the hind part of the tail. Caudal fin forked. Pectoral spine (broken) stronger than the dorsal spine, strongly serrated interiorly and finely granulated exteriorly; the soft pectoral as long as the head without snout. Ventral fin shorter than pectoral, not extending on to the vent. Dorsal and caudal fins with a black margin.

Singapore.

a. Eleven inches long. From the Haslar Collection.

5. Macrones nigriceps.

Bagrus nigriceps, *Cuv. & Val.* xiv. p. 412.
—— singaringan, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 22.
—— heterurus, *Bleek. l. c.* p. 23.
—— macronema, *Bleek. l. c.* p. 22, and *Prodr. Silur.* p. 157.
Hypselobagrus macronema, *Bleek. Atl. Ichth. Silur.* p. 58. tab. 73.

D. 1/7. A. 11. P. 1/9–11.

Closely allied to *M. cavasius*. The height of the body is nearly equal to the length of the head, and one-fifth, or rather more than one-fifth, of the total; head as broad as high, its greatest width being contained once and two-fifths or once and a third in its length. The nape and the occipital process are granulated, the latter extending on to the basal bone of the dorsal spine. Vomerine teeth in an uninterrupted crescent-shaped band. The maxillary barbels extend to the tail or to the caudal fin. The upper jaw is the longer. The soft dorsal fin is pointed, as high as, or higher than, the body; the adipose fin commences immediately behind the dorsal, and is thrice or nearly four times as long. The dorsal spine is slender, more than half as long as the head, slightly tubercular, and serrated at the apex. Pectoral fins rather shorter than the head; their spine is strong, shorter than that of the dorsal fin, and strongly serrated along its inner edge. Ventrals nearly as long as pectorals.

Java, Sumatra, and Borneo.

a. Adult. From Dr. P. v. Bleeker's Collection.

6. Macrones leucophasis.

Bagrus leucophasis, *Blyth, Journ. As. Soc. Beng.* 1861, xxix. p. 148.

D. 1/7. A. 10. P. 1/9.

Maxillary barbels reaching to the end of the adipose fin. Eyes separated by an interspace equal to the orbit. Occipital process nearly as in *M. gulio*. Dorsal spine moderately slender, and pectinated behind for its terminal third; the next two soft rays being longer than the spine. Adipose fin elongated longitudinally. Fins chiefly black; body dark brown, passing to silky white anterior to the dorsal spine. (*Blyth.*)

Burmese rivers.

Largest specimen $5\frac{1}{2}$ inches long, $1\frac{1}{4}$ inch high at the dorsal spine, and length of dorsal spine $1\frac{1}{16}$ inch.

II. Adipose fin not much longer, or shorter than anal.

A. A separate interneural shield on the nape.

7. Macrones aor.

Pimelodus aor, *Ham. Buch. Fish. Gang.* pp. 205, 379. pl. 20. fig. 68.
Bagrus aor, *Cuv. & Val.* xiv. p. 405; *Jacquem. Voy. Ind. Poiss.* pl. 16. fig. 1; *Bleek. Verh. Bat. Gen.* xxv., *Hindost.* p. 116.
Platystoma seenghala, *Sykes, Trans. Zool. Soc.* ii. p. 371. tab. 65. fig. 2.
Bagrus aorellus, *Blyth, Journ. As. Soc. Beng.* xxvii. p. 283.

B. 12. D. 1/7. A. 13. P. 1/10. V. 6.

Head and body rather elongate; the greatest width of the head is contained once and two-thirds in its length. Snout spatulate, its length being two-fifths of that of the head; the upper jaw is the longer; interneural shield twice or thrice as long as broad in adult specimens, narrower in young ones. The maxillary barbels are very long, extending to or beyond the adipose fin. Dorsal spine very strong, serrated behind, as long as, or even longer than, the head in full-grown specimens, rather shorter in young ones. The adipose fin commences at some distance behind the dorsal, and is not twice as long as the latter, and nearly as high as the hinder part of the tail. Caudal fin deeply forked, with the upper lobe produced. Pectoral spine as strong as that of the dorsal fin, with a finely serrated outer edge, and with a coarse serrature along its inner margin; its length is three-fifths of that of the head; ventral inserted below the end of the dorsal fin. A round black spot on the end of the adipose fin.

East Indian continent.

a–b. Adult and half-grown: stuffed. Ganges.
c. Half-grown. Jamu, Himalayas. From the Collection of Messrs. v. Schlagintweit.
d. Adult: stuffed. Seharanpore. From Mr. Griffith's Collection.
e–g. Adult and half-grown: stuffed. India.

In *very young specimens* (from 3 to 6 inches long) the dorsal spine is comparatively feeble, much shorter than the first ray, and not much more than half as long as the head.

h–l. Young. India. Presented by G. R. Waterhouse, Esq.
m. Young. Bengal. From the Collection of the East India Company.

8. **Macrones lamarrii.**

Bagrus lamarrii, *Cuv. & Val.* xiv. p. 407. pl. 415.

D. 1/7. A. 12. P. 1/9. V. 6.

Head and body elongate, the length of the former being rather more than one-fourth of the total (without caudal); the greatest width of the head is one-half of its length, and the length of the snout nearly one-fourth; snout spatulate, with the upper jaw longer. Interneural shield twice as long as broad in adult specimens, and four times as long as broad in young ones. The maxillary barbels extend to, or slightly beyond, the dorsal fin. Dorsal spine very strong, granulated, serrated behind, three-fifths as long as the head in old specimens. The length of the adipose fin equals that of the dorsal, and is less than the distance between both fins; it is lower than the hinder part of the tail. Caudal fin deeply forked, with the upper lobe produced. Pectoral spine as strong as, but much shorter than, that of the dorsal fin; it is granulated, serrated along its inner edge. Ventral fin inserted behind the vertical from the dorsal fin. A round black spot on the end of the adipose fin.

Ganges.

a–b. Three feet long: stuffed. Ganges. From Capt. Boys's Collection.
c–d. Half-grown: stuffed. India. From the Collection of the East India Company.
e. Half-grown. Afghanistan. From Mr. Griffith's Collection.

B. No separate interneural shield.

9. **Macrones gulio.**

Penne visch, *Nieuh. Zee- en Lantr.* ii. p. 271 c. fig.
Pimelodus gulio, *Ham. Buch.* pp. 201, 379. pl. 23. fig. 66.
Bagrus albilabris, *Cuv. & Val.* xiv. p. 416.
—— fuscus, *Cuv. & Val.* xiv. p. 417 (variety with black mandibulary barbels)..
—— birmannus, *Cuv. & Val.* xiv. p. 419.
—— gulio, *Cuv. & Val.* xiv. p. 418; *Bleek. Verh. Bat. Gen.* xxv., *Nalez. Beng.* p. 116, and *Prodr. Silur.* p. 163.

? Bagrus abbreviatus, *Cuv. & Val.* xiv. p. 420.
Bagrus abbreviatus, *Cant. Mal. Fish.* p. 254.
—— gulioides, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 24.
—— melas, *Bleek. l. c.*
—— schlegelii, *Bleek. l. c.* p. 25.
—— rhodopterygius, *Bleek. l. c.*
Aspidobagrus gulio, *Bleek. Atl. Ichth. Silur.* p. 60. tab. 74. fig. 2.

D. 1/7. A. 14. P. 1/8-9. V. 6.

The height of the body is contained from four times and a third to four times and two-thirds in the total length (without caudal), the length of the head thrice and two-thirds; head broader than high, its greatest width being three-quarters of its length; snout depressed, broad, one-third of the length of the head; the upper jaw is somewhat the longer. The vomerine teeth form a narrow, continuous, crescentic band. Nasal barbels much shorter than the head; the maxillary barbels extend to the anal fin; the outer of the mandible are longer than the inner and than the head. There is a cutaneous interspace between the base of the dorsal fin and the occipital process. Dorsal spine rather strong, strongly serrated behind, more than half as long as the head, but shorter than the first soft ray. Base of the adipose fin rather shorter than that of the dorsal, its length being rather less than one-half of the distance between both fins. Caudal fin deeply forked, the lower lobe being rather the shorter and rounded. Pectoral spine strongly serrated interiorly, as long as the head without snout, extending beyond the vertical from the origin of the dorsal. Ventral inserted behind the dorsal.

East Indies.

a–b. Skins. Pinang. From Dr. Cantor's Collection as *P. abbreviatus*.
c. Calcutta. From the Collection of Messrs. v. Schlagintweit.
d. Ceylon. Purchased of Mr. Cuming.
e. India. Presented by W. Masters, Esq.
f–m. Ponnay (Madras Presidency). Presented by Capt. Mitchell.

10. Macrones nemurus.

Bagrus nemurus, *Cuv. & Val.* xiv. p. 423; *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 27, and *Prodr. Silur.* p. 150.
—— sieboldii, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 27.
Hemibagrus nemurus, *Bleek. Atl. Ichth. Silur.* p. 55. tab. 69.

B. 10. D. 1/7. A. 12–13. P. 1/8–9. V. 6.

The length of the head is contained thrice and a quarter or thrice and a half in the total (without caudal); head broader than high, its greatest width being equal to its length without snout; snout spatulate, its length being one-third, or rather less than one-third, of that of the head; the upper jaw is the longer. The band of vomerine teeth is as broad as, or broader than, that of the intermaxillary. Maxillary barbels very long. No rugose shield between occiput and dorsal fin. Dorsal spine of moderate strength, as long as the distance of the eye from the end of the operculum, finely serrated behind. The adipose fin is considerably shorter than the dorsal; the length of the dorsal fin is less than its distance from the adipose. Caudal deeply forked, with the upper lobe more or less produced. Pectoral spine very strong, serrated interiorly, as long as the head without snout, extending to the vertical from the second and third dorsal rays. Ventral inserted behind the dorsal.

Java. Sumatra, Banka, Borneo.

a, *b*. Fine specimens. Java.
c. Half-grown. From Dr. P. v. Bleeker's Collection.
d. Young. From Dr. Cantor's Collection.

Bagrus hoevênii (Bleek. Verh. Bat. Gen. xxi., Silur. Batav. p. 26; Prodr. Silur. p. 153; and Atl. Ichth. Silur. p. 56. tab. 70) differs scarcely from *B. nemurus* in having the body a little more slender, the head a little shorter, and the occipital process rather more distinct.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

11. Macrones planiceps.

Bagrus planiceps, (*K. & v. H.*) *Cuv. & Val.* xiv. p. 421; *Bleek. Prodr. Silur.* p. 154.
—— anisurus, (*K. & v. H.*) *Cuv. & Val.* xiv. p. 422.
—— flavus, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 28.
Hemibagrus planiceps, *Bleek. Atl. Ichth. Silur.* p. 56. tab. 71.

D. 1/7. A. 14 (11–12, *C. & V.*). P. 1/9.

The height of the body is contained six times and a half in the total length (without caudal), the length of the head four times; the depth of the head is contained twice in its length, its width once and a third; head not granulated above, nape of the neck covered with skin. Snout much depressed; vomerine teeth in a continuous crescent-shaped band; the maxillary barbels extend to, or beyond, the ventral fins. Dorsal fin scarcely higher than the body; its spine is half as long as the head, and not serrated: adipose fin as long as the dorsal; its distance from the dorsal equals its length. Pectoral shorter than the head; its spine is stronger and longer than that of the dorsal fin, and serrated interiorly; ventral shorter than the pectoral. Caudal deeply forked, with the lobes pointed.

Java and Sumatra.

a. From Dr. P. v. Bleeker's Collection.

12. Macrones tengara.

Pimelodus tengara, *Ham. Buch. Fish. Gang.* pp. 183, 377. tab. 3. fig. 61.
—— carcio, *Ham. Buch.* pp. 181, 377.
—— batasius, *Ham. Buch.* tab. 23. fig. 60 (not descr.).
Bagrus tenggara, *Cuv. & Val.* xiv. p. 414; *Bleek. Verh. Bat. Gen.* xxv., *Hindost.* p. 114.
—— batasio, *Cuv. & Val.* xiv. p. 425.

B. 10. D. 1/7. A. 12. P. 1/8. V. 6. Vert. 9/22.

The height of the body equals the length of the head, and is one-fourth of the total (without caudal); head as broad as high, its greatest width being equal to its length without snout; snout depressed, broad, one-third, or rather less than one-third, of the length of the head; the upper jaw is somewhat the longer. The vomerine teeth form a very narrow crescentic band, subinterrupted in the middle. Nasal barbels half as long as the head; the maxillary barbels extend to, or beyond, the origin of the anal fin; the outer barbels of the lower jaw are longer than the inner, and extend nearly to the extremity of the pectoral. A triangular bone in front of the dorsal fin is joined by a long, bony, occipital process. Dorsal spine rather feeble, half as long as the head, with both edges serrated at its extremity. The length of the adipose fin equals that of thé dorsal, and the distance between both fins. Caudal fin deeply forked, with the upper lobe longest. Pectoral spine strongly serrated interiorly, longer and stronger than that of the dorsal fin, extending beyond the vertical from the origin of the dorsal. Ventral inserted behind the dorsal. Greenish olive, with three brown longitudinal bands, the middle of which commences from a large blackish ocellus behind the head; the bands and ocellus are more distinct in young specimens than in old ones. Sometimes a dark spot on the middle of the root of the caudal.

East Indies.

a. Adult. Java. Purchased of Mr. Frank.
b, *c*, *d*. Many specimens. Madras.
e. Many specimens. Ceylon. Purchased of Mr. Cuming.
f–h. Adult and half-grown. Ganges. Presented by G. R. Waterhouse, Esq.—Probably types of the species.
i. Several young specimens. Calcutta. From the Collection of Messrs. v. Schlagintweit.
k. Adult. Khasya. Presented by Sir W. Hooker.
l. Half-grown. Sikkim. From the Collection of Messrs. v. Schlagintweit.
m–p. Adult. India.
q. Adult: skeleton. Ceylon. Purchased of Mr. Cuming.

13. **Macrones wolffii.**

Bagrus wolffii, *Bleek. in Nat. Tydschr. Nederl. Ind.* ii. p. 205, and *Prodr. Silur.* p. 160.

Hypselobagrus wolffi, *Bleek. Atl. Ichth. Silur.* p. 58. tab. 74. fig. 1.

D. 1/7. A. 14. P. $\frac{1}{8-9}$.

The height of the body is contained four times or four times and a quarter in the total length (without caudal), the length of the head four times or four times and a half; head as broad as high, granulated above; the occipital process is narrow and extends on to the basal bone of the dorsal spine. Teeth on the palate in a crescent-shaped band. Barbels long: the nasal barbels extend to the pectoral fin, the maxillary barbels to the caudal. Dorsal fin pointed, higher than the body; its spine is of moderate strength, two-thirds of the length of the head, granulated in front and serrated behind. The length of the adipose fin equals its distance from the dorsal, and is rather more than that of the base of the dorsal. Pectorals scarcely shorter than the head, with a strong, serrated spine; ventrals shorter than pectorals.

Borneo and Sumatra; Siam.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection

b. Siam. Purchased of Mr. Jamrach.

14. **Macrones wyckii.**

Bagrus wyckii, *Bleek. Prodr. Silur.* p. 156.
Hemibagrus wyckii, *Bleek. Atl. Ichth. Silur.* p. 57. tab. 72.

D. 1/7. A. 13. P. 1/11.

The height of the body is contained five times in the total length (without caudal), the length of the head three times and two-fifths or three times and a fourth; head broader than high, its greatest width being contained once and a third in its length. Head smooth above, not granulated or striated; occipital process short, not extending on to the basal bone of the dorsal spine. Teeth on the palate in a horseshoe-like band. The maxillary barbels do not extend on to the dorsal fin. Dorsal fin not higher than the body; its spine is half as long as the head, granulated in front and serrated behind. Adipose fin much longer than, and remote from, the dorsal. Pectoral spine strongly serrated interiorly, rather shorter than that of the dorsal fin. Ventrals shorter than pectorals.

River Tjitarum (Java).

a. Type of the species. From Dr. P. v. Bleeker's Collection.

15. **Macrones batasio.**

Pimelodus batasio, *Ham. Buch.* pp. 179, 377 (not fig.).
Batasio buchanani, *Blyth, Journ. As. Soc. Beng.* 1861, xxix. p. 150.

D. 1/7. A. 16.

Barbels shorter than the head; two longitudinal stripes on each side, dotted with black; a blackish spot on the shoulder. (*H. B.*)

River Tista.

16. **Macrones affinis.**

Batasio affinis, *Blyth, Journ. As. Soc. Beng.* 1861, xxix. p. 150.

D. 1/7. A. 12.

Maxillary barbels scarcely passing the eye; mandibulary barbels minute. Body with three or four indistinct broad blackish cross-bands; a black spot on the shoulder, and another on the dorsal fin. (*Blyth.*)

Tenasserim.

	inches.
Total length	3¼
Height of the body	¾

17. Macrones tengana.

Pimelodus tengana, *Ham. Buch.* pp. 176, 377. pl. 39. fig. 58.
Bagrus tengana, *Cuv. & Val.* xiv. p. 433.

D. 1/7. A. 14.

All the barbels shorter than the head; adipose fin shorter than the dorsal. Dorsal spine smooth, pectoral spine strongly serrated. (*H. B.*)

A small species, from the Brahmaputra.

18. Macrones keletius.

? ? Bagrus keletius, *Cuv. & Val.* xiv. p. 411.
Bagrus keletius, *Bleek. Verh. Batav. Gen.* xxv., *Hindost.* p. 115.

D. 1/7. A. 9–10. P. $\frac{1}{9\text{–}10}$.

The height of the body is contained six times and two-fifths in the total length (with the caudal), the length of the head five times and a half; the depth of the head is nearly equal to its width, and two-thirds of its length. The occipital process is more than twice as long as broad. Snout longer than the eye; the vomerine teeth form an uninterrupted crescentic band. The maxillary barbels extend to the tail, the outer ones of the mandible are longer than the head. Dorsal fin as high as the body, with the spine slender, smooth, and half as long as the head. The adipose fin commences immediately behind the dorsal, and is twice as long as the head. Pectoral fins a little shorter than the head; their spine is longer and stronger than that of the dorsal fin, and serrated. (*Bl.*)

Hooghly.

19. Macrones itchkeea.

Phractocephalus itchkeea, *Sykes, Trans. Zool. Soc.* ii. p. 373. tab. 67. fig. 1.

D. 1/7. A. 12.

Snout obtuse, with the upper jaw rounded. The maxillary barbels extend to the end of the pectoral. Dorsal spine not serrated. (*Sykes.*)

Described from specimens 2 inches long. Dukhun.

32. PSEUDOBAGRUS.

Pseudobagrus, *Bleek. Act. Soc. Sc. Indo-Nederl.* vii., *Japan*, vi. p. 87.

Adipose fin short or of moderate length; a short dorsal fin with a pungent spine and with from five to seven soft rays; anal fin of moderate length, with twenty or more rays. Barbels eight. No labial teeth; teeth on the palate villiform, forming a continuous transverse band; eyes of moderate size or rather small. Caudal fin emarginate or forked; ventrals with six rays.

Japan, China, and Cochinchina.

a. The upper surface of the head is covered with skin.

1. Pseudobagrus aurantiacus.

Bagrus aurantiacus, *Schleg. Faun. Japon. Poiss.* p. 227. pl. 104. fig. 2.
Pseudobagrus aurantiacus, *Bleek. l. c.* p. 85.

B. 8. D. 1/6. A. 20–22. P. 1/8.

The length of the head is one-fifth of the total (with the caudal). Nasal barbels one-half or two-thirds as long as the head, shorter than those of the maxillaries. Dorsal fin nearly as high as the body; dorsal and pectoral spines of moderate length and strength; dorsal spine not serrated. Adipose fin as long as the anal.

Japan.

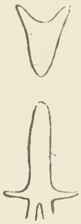
a. Half-grown. From Dr. P. v. Bleeker's Collection.

2. Pseudobagrus vachellii.

? Bagrus (?) bouderius, *Richards. Ichth. Chin.* p. 283 (from a rude figure).
Bagrus (?) vachellii, *Richards. l. c.* p. 284.

D. 1/7. A. 23–24. P. 1/9. Vert. 11/32.

Head smooth above, sometimes covered with loose skin sometimes with the bones exposed. Occipital process narrow, three or four times as long as broad; basal bone of the dorsal spine elongate triangular, more than half as long as the occipital process. Cleft of the mouth narrow, inferior; teeth on the palate villiform, in a crescent-shaped band. Barbels slender: nasal barbels extending to behind the orbit, maxillary barbels to the end of the head. Dorsal fin as high as the body; dorsal spine serrated behind, three-fourths or four-fifths of the length of the head. Pectoral spine stronger than, and as long as, that of the dorsal fin, very strongly serrated along its inner margin. Adipose fin longer than the dorsal.



China.

a. Half-grown. Chikiang. From Mr. Fortune's Collection.
b, *c–d*. Half-grown and young. China.
e. Thirteen inches long. From the Haslar Collection.
f. Half-grown: skeleton.

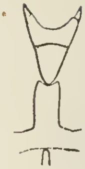
β. Head osseous above.

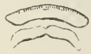
3. Pseudobagrus fulvi-draco.

Pimelodus (?) fulvi-draco, *Richards. Ichth. Chin.* p. 286.
? Silurus calvarius, *Basil. in Nouv. Mém. Natur. Mosc.* 1855, x. p. 241. pl. 9. fig. 1 (bad).

D. 1/7. A. 20. P. 1/7.

Head granulated above; occipital process subquadrangular, nearly twice as long as broad; basal bone of the dorsal spine triangular, as long as the occipital process; a suture crosses its middle, and there is another near the extremity of each of its lateral portions. Dorsal fin as high as the body; dorsal spine slightly serrated behind, as long as the head without snout. Pectoral spine stronger, and rather longer, than that of the dorsal fin, serrated along both edges, much more strongly along the interior than along the exterior. Adipose fin as long as the dorsal. Cleft of the mouth rather wide, transverse, with the upper jaw longest; teeth on the palate villiform, in a rather narrow subcrescentic band. The median groove on the upper surface of the head extends nearly to the base of the occipital process. Barbels slender; nasal barbels half as long as the head, maxillary barbels extending beyond the root of the pectoral.





China.

a. Six inches long. China. Presented by Dr. A. Günther.

4. Pseudobagrus brachysoma.

D. 1/5. A. 20. P. 1/7.

The height of the body is nearly equal to the length of the head, which is contained thrice and a quarter in the total (without caudal). Head granulated above. The occipital process is small, triangular, similar to, but shorter than, the basal bone of the dorsal spine; the median groove on the upper surface of the head does not extend backwards beyond the level of the orbit. Cleft of the mouth rather wide, with the jaws subequal anteriorly. The maxillary does not extend to the orbit. Teeth on the palate villiform, in a very narrow, transverse, subcrescentic band. Barbels slender, shorter than the head; nasal barbels half as long as the head. The diameter of the eye is less than the extent of the snout, one-fifth of the length of the head, and two-fifths of the width of the interorbital space. Dorsal fin as high as the body; dorsal spine rather slender, slightly serrated behind, two-thirds of the length of the head; (pectoral spine broken;) adipose fin shorter than dorsal; anal with the inferior margin rounded; caudal deeply forked. A large black ocellus, edged with white behind the shoulder; a blackish streak along each caudal lobe.

Cochinchina.

a. Skin, 5 inches long.

33. LIOCASSIS.

Leiocassis, *Bleek. Prodr. Silur.* p. 139.

A rather long adipose fin; a short dorsal fin with a pungent spine and with seven soft rays; anal fin short with less than twenty rays. Barbels eight. No moveable labial teeth; teeth on the palate in a continuous band. The upper jaw is the longer. Eyes below the skin; no free circular fold round the orbit. Dorsal spine denticulated, the teeth not pointing upwards; caudal forked; ventral with six rays.

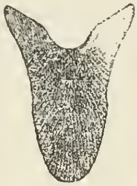
East Indian Archipelago; Japan.

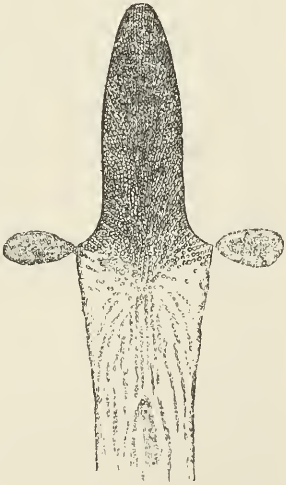
a. Snout much produced; occipital process naked.

1. **Liocassis longirostris.**

B. 8. D. 1/7. A. 17. P. 1/9. V. 6.

The snout is much produced and conical, so that the mouth is about midway between eye and end of the snout. The length of the head is contained thrice and three-fourths in the total (without caudal); it is as high as broad, with the crown compressed, the sides obliquely sloping outwards. The eyes are very small, without free circular eyelid; they are much nearer to the extremity of the snout than to the end of the operculum. The width of the interorbital space is two-thirds of the extent of the snout, which is rather more than one-third of the length of the head. The upper side of the head is only slightly granulated; the median fonticulus does not extend to the base of the occipital process: the latter is finely granulated, arrow-shaped, twice as long as broad; below the skin it extends on to the basal bone of the dorsal spine, which is elongate, triangular, and finely granulated. A skinny space between the basal bone and the granulated part of the occipital process. Opercles covered with skin. The cleft of the mouth is transverse, entirely at the lower side of the snout. The teeth are villiform, in broad bands: the intermaxillary band is four times as broad as long; the vomerine band is immediately behind, and nearly as broad and long as the former. The posterior nostril is nearer to the eye than to the extremity of the snout, and its barbel is slender, not much longer than the eye; the anterior nostril is in the upper lip, in front of the maxillary barbel. Maxillary and mandibulary barbels small. The gill-membranes are separate nearly to the front of the isthmus.





The trunk is slightly compressed, whilst the tail is elongate, tapering. The greatest depth of the body is one-fifth of the total length (without caudal), whilst the least depth of the tail is only a little more than one-half of the length of the head. The free portion of the tail, between adipose and caudal fin, equals the base of the adipose fin, and is a little less than one-fifth of the total (without caudal).

The dorsal spine is strong, not much shorter than the head; its serrature behind does not point either downwards or upwards, but is vertical to the spine · the anal is as long as, and terminates in the same vertical with, the adipose fin. Caudal deeply forked. The pectoral spine is somewhat stronger and shorter than that of the dorsal fin; humeral process of moderate size, pointed behind. Mucous cavity in the axil with two foramina. The ventral fins extend somewhat beyond the origin of the anal.

Japan.

a. Twenty-three inches long. Purchased of Mr. Jamrach.

β. The upper jaw somewhat longer than the lower; occipital process covered with thin skin.

2. Liocassis crassilabris.

D. 1/7. A. 18. P. 1/8.

Snout produced, subconical, with the upper jaw projecting beyond the lower, its extremity and the upper lip being soft and fleshy; mouth transverse, situated at the lower side of the snout. The length of the head is a little less than one-fourth of the total (without caudal); it is nearly as high as broad, with the crown compressed, and with the sides sloping obliquely outwards. Eyes of moderate size, without free orbital margin; their diameter is one-half of the length of the snout, and one-third of that of the postorbital portion of the head; the width of the interorbital space is not much less than the length of the snout. The upper side of the head and the nape are covered with thick skin: the basal bone of the dorsal spine touches the occipital process, and both are nearly of the same length.

Teeth villiform: the intermaxillary band is thrice as broad as long; vomerine band immediately behind, horseshoe-shaped, as wide as that of the intermaxillaries. The posterior nostril is nearer to the eye than to the extremity of the snout, and its barbel is slender, somewhat longer than the eye. Anterior nostril close to the extremity of the snout, above and inwards from the maxillary barbel, which is half as long as the head; mandibulary barbels still shorter. The gill-membranes are united for a short distance only.

Trunk somewhat compressed, its greatest depth being equal to the length of the head; the least depth of the tail is only one-third of the height of the body, and the length of the free portion of the tail, between adipose and caudal fins, is one-sixth of the total (without caudal).

Dorsal spine rather strong, slightly serrated behind, the teeth pointing downwards; its length is three-fourths of that of the head; adipose fin much longer than anal, nearly one-fourth of the total length (without caudal). Caudal with the lobes rounded, not split to the base. Pectoral spine somewhat stronger and shorter than that of the dorsal fin, smooth along its outer edge, but strongly serrated along the inner one; humeral process pointed behind, half as long as the pectoral spine. The length of the pectoral fin is four-fifths of that of the head. Porus axillaris very distinct. The ventral fins extend to the origin of the anal. Coloration uniform.

a. Seven and a half inches long. China. Presented by Dr. A. Günther.

3. Liocassis pœcilopterus.

Bagrus pœcilopterus, *(K. & v. H.) Cuv. & Val.* xiv. p. 431.
—— ramentosus, *Müll. & Trosch. Hor. Ichth.* iii. p. 7.
Leiocassis pœcilopterus, *Bleek. Prodr. Silur.* p. 140, and *Atl. Ichth. Silu* p. 53. tab. 66. fig. 2 (not *Borneo,* vii.).

B. 10–11. D. 1/7. A. 15–16. P. $\frac{1}{7-8}$.

The height of the body is contained four times in the total length (without caudal), the length of the head thrice and two-thirds; head as high as broad, its greatest width being two-thirds of its length; the occipital process is elongate, extending on to the basal bone of the dorsal spine; the upper jaw projects beyond the cleft of the mouth, which is nearly straight. Barbels very slender and short; those of the maxillaries extend to, or somewhat beyond, the eye. The dorsal spine is of moderate length, serrated behind, its length being contained once and a half or once and three-fourths in that of the head. The length of the adipose fin nearly equals its distance from the dorsal, and is less than twice the length of the dorsal. Pectoral spine strong, as long as that of the dorsal fin, serrated interiorly. Caudal deeply forked. Brownish, with irregular dark cross-bands; fins with two broad brown bands.

Java.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

4. Liocassis micropogon.

Bagrus micropogon, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 94.
—— pœcilopterus, *Bleek. l. c.* v. p. 445 (not *K. & v. H.*).
Leiocassis micropogon, *Bleek. Prodr. Silur.* p. 142, and *Atl. Ichth. Silur.* p. 53. tab. 66. fig. 1.

B. 9–10. D. 1/7. A. 15–16. P. 1/8.

The height of the body is contained five times and a half or six times in the total length (without caudal), the length of the head thrice and two-fifths or thrice and three-quarters; head rather broader than high, its depth being one-half of its length. Occipital process very short, terminating at a great distance from the base of the dorsal. The upper jaw projects beyond the cleft of the mouth, which is nearly straight. Barbels slender and short; those of the maxillaries extend to the eye only, or to the opercles. The dorsal spine is of moderate strength, serrated behind, its length being one-half, or rather more than one-half, of that of the head. The adipose fin is more than twice as long as the dorsal, and commences at a considerable distance behind it. Pectoral spine strong, serrated interiorly, about as long as that of the dorsal fin. Caudal deeply forked. Brownish with irregular dark cross-bands; a brown lateral band running from the head to the caudal; fins with one or two brown bands.

Sumatra, Banka, Biliton, Borneo.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

5. Liocassis stenomus.

Bagrus stenomus, (*Kuhl & v. Hass.*) *Cuv. & Val.* xiv. p. 415.
Leiocassis ellenriederi, *Bleek. Act. Soc. Sc. Indo-Nederl.* ix. p. 11.
—— stenomus, *Bleek. Atl. Ichth. Silur.* p. 54. tab. 67. fig. 3.

B. 9. D. 1/7. A. 15. P. 1/7.

The height of the body is nearly one-sixth of the total length (without caudal), the length of the head two-ninths; head broader than high, and nearly as broad as long. The occipital process is triangular, and reaches just to the basal bone of the dorsal fin; the upper jaw projects a little beyond the cleft of the mouth, which is slightly curved. The maxillary barbels and the outer ones of the mandible are longer than the head. Pectoral spine considerably longer and stronger than that of the dorsal fin; the length of the adipose fin is equal to that of the dorsal, but much less than the space between the two fins. Caudal deeply forked, with the lobes produced into filaments.

Java and Sumatra.

a. From Dr. P. v. Bleeker's Collection.

34. BAGROIDES.

Bagroides, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 204.
Bagroides et Pseudobagrichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 94.

Adipose fin long; a short dorsal fin with a pungent spine and seven soft rays; anal fin short, with less than twenty rays. Barbels eight. No labial teeth; teeth on the palate in an uninterrupted band or patch. Head covered with thick skin; eyes below the skin. No free circular fold round the orbit. Dorsal spine serrated, the teeth pointing upwards; caudal fin forked; ventrals with six rays. Gill-membranes united below the throat, but not grown to the isthmus, with a very shallow notch behind.

Sumatra and Borneo.

a. Adipose fin about as long as the head; vomerine teeth in a subtriangular patch which is rounded anteriorly: *Bagroides,* Blkr.

1. Bagroides melanopterus.

Bleeker, Nat. Tydschr. Nederl. Ind. ii. p. 204; *Prodr. Silur.* p. 134; and *Atl. Ichth. Silur.* p. 51. tab. 66. fig. 3.

B. 7–8. D. 1/7. A. 16–17. P. 1/9.

The height of the body is contained four times in the total length (without caudal), the length of the head four times and a third or five times; head as broad as high, its greatest width being contained once and a fourth in its length. Upper jaw prominent. The teeth on the palate are obtuse. Barbels shorter than the head without tentacles; lateral line with filaments anteriorly. Dorsal fin lower than the body · its spine is strong, generally shorter than the head, striated. Adipose fin twice as long as the dorsal, the length of which equals the distance between both fins. Pectorals as long as the head, with a very strong spine, serrated interiorly; ventrals much shorter than pectorals; caudal deeply forked, with the lobes pointed.

Sumatra and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

β. Adipose fin twice as long as the head; vomerine teeth in a short, curved, uninterrupted band: *Pseudobagrichthys*, Blkr.

2. Bagroides macropterus.

Bagroides macropterus, *Bleek. Nat. Tydschr. Nederl. Ind.* v. p. 515, and *Prodr. Silur.* p. 136.

Pseudobagrichthys macropterus, *Bleek. Atl. Ichth. Silur.* p. 50. tab. 67. fig. 1.

B. 7. D. 1/7. A. 14. P. 1/9.

The height of the body is one-fifth of the total length (without caudal), the length of the head one-sixth; head rather higher than broad, its greatest width being two-thirds of its length; the upper jaw prominent; teeth on the palate minute, forming a short subcrescentic band. Barbels slender, shorter than the head. Dorsal fin as high as the body; its spine is of moderate strength, striated, about as long as the head. The adipose fin commences at a short distance from, and is more than four times as long as, the dorsal. Pectorals rather longer than the head; their spine is stronger than, and about as long as, that of the dorsal fin, and strongly serrated interiorly; ventrals shorter than pectorals.

Sumatra (Palembang, Moarakompeh).

a. Type of the species. From Dr. P. v. Bleeker's Collection.

3. Bagroides macracanthus.

Bagroides macracanthus, *Bleek. Nat. Tydschr. Nederl. Ind.* vii. p. 88, and *Prodr. Silur.* p. 137.

Pseudobagrichthys macracanthus, *Bleek. Atl. Ichth. Silur.* p. 50. tab. 67. fig. 1.

B. 7. D. 1/7. A. 14. P. 1/9.

Nape of the neck elevated. The height of the body is contained rather more than four times in the total length (without caudal), the length of the head five times and a half; head rather higher than broad, its width being two-thirds of its length. The upper jaw prominent; the teeth on the palate are very conspicuous. Barbel slender, shorter than the head. Dorsal fin rather higher than the body; its spine is of moderate strength and much longer than the head. The adipose fin commences at a very short distance from, and is about four times as long as, the dorsal. Pectorals about as long as the head, their spine being as strong as, but much shorter than, that of the dorsal fin, serrated interiorly. Ventrals shorter than pectorals.

Eastern Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

35. BAGRICHTHYS.

Bagrichthys, *Bleek. Prodr. Silur.* p. 130.

Adipose fin exceedingly long; a short, high dorsal fin with a pungent spine and seven soft rays; anal fin short. Trunk much compressed and elevated. Barbels eight. Each jaw with a band of villiform teeth, the lower with long moveable labial teeth besides; teeth on the vomer in a continuous band. Head covered with skin; eyes without free orbital margin, below the skin. Caudal fin forked; ventrals with six rays.

East Indian Archipelago.

1. Bagrichthys hypselopterus.

Bagrus hypselopterus, *Bleek. Nat. Tydschr. Ned. Ind.* iii. p. 588 c. tab.
Bagrichthys hypselopterus, *Bleek. Prodr. Silur.* p. 131, and *Atl. Ichth. Silur.* p. 49. tab. 68.

B. 7. D. 1/7. A. 15. P. $\frac{1}{10-11}$.

Body compressed, with the nape and the base of the dorsal fin much elevated. All the barbels shorter than the head; mandibulary barbels with short tentacles. Dorsal fin exceedingly high, the spine and the first ray being twice as long, or more than twice as long, as the head; dorsal spine serrated behind. Adipose fin very long, contiguous with the dorsal, higher than the tail. Pectorals as long as the head, with a strong, serrated spine; ventrals as long as pectorals. Caudal deeply forked, with the lobes more or less produced into filaments.

Sumatra and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

36. RITA*.

Rita, *Bleek. Prodr. Silur.* p. 60.

An adipose fin of moderate length; a short dorsal fin with a pungent spine and with six (seven) soft rays; anal fin short. Nostrils distant. Barbels six: two at the maxillaries, two minute ones at the posterior nostrils, and two at the throat. Teeth on the palate granular or molar-like. The upper jaw the longer. Orbit without free, circular eyelid. Caudal forked; ventral rays six.

East Indies.

1. Rita crucigera.

Pimelodus rita, *Ham. Buch.* p. 165. pl. 24. fig. 53.
Arius rita, *Cuv. & Val.* xv. p. 88. pl. 429.
—— cruciger, *Owen, Osteol. Catal. Coll. Surg.* i. p. 26.
Rita buchanani, *Bleek. Prodr. Silur.* p. 65, and *Verhand. Bat. Gen.* xxv., *Beng.* p. 123. tab. 3. fig. 1.

D. 1/6. A. 12. P. 1/10.

The upper surface of the head is granulated; basal bone of the dorsal spine well developed, and as long as the occipital process. Maxillary barbels shorter than the head. The teeth on the palate form two subelliptic patches which are confluent anteriorly. Humeral process very large, nearly as long as the head, rounded behind. Dorsal and pectoral spines exceedingly strong, the former as long as the head. Adipose fin as long as the dorsal.

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* 1. Pimelodus rama, *Ham. Buch.* pp. 176, 377. pl. 3. fig. 55.—Brahmaputra.

Bengal.

a–d. Adult and half-grown: stuffed. Ganges.
e. Adult: stuffed. From Mr. Griffith's Collection.
f. Adult: skin. India.

2. **Rita pavimentata.**

Arius pavimentatus, *Valenc. in Jacq. Voy. Indes, Atl. Poiss.* pl. 17. fig. 2; *Cuv. & Val.* xv. p. 94.
? Arius ritoides, *Cuv. & Val.* xv. p. 92.

D. 1/6. A. 12. P. 1/10.

The upper surface of the head is covered with skin; maxillary barbels shorter than the head. The teeth on the palate granular in front, enlarged and molar-like behind, in two subelliptic patches which are confluent anteriorly. The humeral process is three-fifths as long as the head, sharply pointed behind. Dorsal spine moderately strong, its length being two-thirds or three-quarters of that of the head. Adipose fin as long as the dorsal.

Bengal.

a. Nine inches long. East Indies. Presented by Dr. A. Günther.
b. Nine inches long: stuffed. East Indies. From the Collection of the Zoological Society.
c–d. Adult and young. Toombudra River. Presented by Capt. J. Mitchell of Madras.

3. **Rita hastata.**

Arius hastatus, *Valenc. in Jacq. Voy. Indes, Atl. Poiss.* pl. 18. fig. 2; *Cuv. & Val.* xv. p. 97.
—— pumilus, *Valenc. l. c.* fig. 1.

D. 1/6. A. 12.

Teeth on the palate in two separate patches. Head smooth above. Dorsal spine moderately strong, higher than the body underneath. (*Val.*)

Hindostan.

4. **Rita kuturnee.**

Phractocephalus kuturnee, *Sykes, in Trans. Zool. Soc.* ii. p. 372. tab. 65. fig. 3.

D. 1/6. A. 12.

Maxillary barbels rather longer than the head. Humeral process two-thirds as long as the head, narrow and rounded behind. Dorsal and pectoral spines moderately strong, strongly serrated, terminating in long soft filaments. Adipose fin shorter than the dorsal. (*Sykes.*)

Beema River (Dukhun). Six inches long.

5. Rita manillensis.

Arius manillensis, *Cuv. & Val.* xv. p. 93.

D. 1/7. A. 17. P. 1/9.

The length of the head is two-ninths of the total (with the caudal); head granulated above; occipital process ovate. Maxillary barbel shorter than the head. Teeth on the palate in two separate ovate patches. Dorsal spine serrated in front. (*Val.*)

Manilla.

b. Palate toothless. Ventral rays six: AKYSINA.

37. ACROCHORDONICHTHYS.

Acrochordonichthys, *Bleek. Prodr. Silur.* p. 221.

Adipose fin low; a short dorsal with one spine and five soft rays; anal fin rather short. Barbels eight: those of the maxillaries scarcely dilated at the base. The upper jaw is rather longer than the lower; teeth villiform, palate edentulous. Head depressed, covered with soft skin above; eyes small, below the skin; the skin of the body with tubercles longitudinally arranged. Gill-opening rather narrow, not extending to above the base of the pectorals. Caudal not emarginate; pectorals horizontal; ventrals with six rays.

Java and Sumatra.

1. Acrochordonichthys platycephalus.

Acrochordonichthys platycephalus, *Bleeker, Prodr. Silur.* p. 224, and *Atl. Ichth. Silur.* p. 67. tab. 84. fig. 2.

B. 6. D. 1/5. A. 9. P. 1/7.

The median groove on the upper surface of the head extends on to the base of the occipital process; a single hollow on each side of the hinder end of the fonticulus; occipital process more than twice as long as broad. The greatest width of the body is nearly one-fourth of the total length. The maxillary barbels reach to the end of the operculum. Sides with three round, distant yellow spots posteriorly.

Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

2. Acrochordonichthys melanogaster.

Pimelodus melanogaster, *Bleek. Nat. Tydschr. Nederl. Ind.* vii. p. 89.

Acrochordonichthys melanogaster, *Bleek. Prodr. Silur.* p. 225, and *Atl. Ichth. Silur.* p. 67. tab. 84. fig. 3.

D. 1/5. A. 9. P. 1/7.

The median groove on the upper surface of the head extends on to the base of the occipital process; its hinder portion with a pair of hollows on each side; occipital process not twice as long as broad. The greatest width of the body is one-fourth of its length. The maxillary barbels do not extend to the end of the head. Belly entirely brownish black.

Sumatra (Palembang).

a. Type of the species. From Dr. P. v. Bleeker's Collection.

3. Acrochordonichthys rugosus.

Pimelodus rugosus, *Bleek. Verh. Bat. Gen.* xxi., *Silur.* p. 11.
Acrochordonichthys rugosus, *Bleek. Prodr. Silur.* p. 227, and *Atl. Ichth. Silur.* p. 68. tab. 83. fig. 4.

D. 1/5. A. 9. P. 1/7.

The median groove on the upper surface of the head extends on to the base of the occipital process; there is a triangular impression on each side of its hinder extremity; occipital process more than twice as long as broad. The greatest width of the body is contained four times and a third or four times and a sixth in the total length. The maxillary barbels do not extend to the end of the opercle. Entirely brownish.

Java and Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

4. Acrochordonichthys pleurostigma.

Pimelodus pleurostigma, *Bleek. Nat. Tydschr. Nederl. Ind.* vii. p. 442.
Acrochordonichthys pleurostigma, *Bleek. Prodr. Silur.* p. 229, and *Atl. Ichth. Silur.* p. 68. tab. 83. fig. 5.

D. 1/5. A. 8. P. 1/6–7.

The median groove on the upper surface of the head extends on to the base of the occipital process; a single hollow on each side of the hinder end of the fonticulus; occipital process triangular, less than twice as long as broad. The greatest width of the body is contained four times and three-fourths or five times in the total length. The maxillary barbel does not extend to the end of the opercle. A series of several rounded yellow spots along the side.

Java.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

5. Acrochordonichthys zonatus.

Pimelodus zonatus, *Bleek. Nat. Tydschr. Nederl. Ind.* vii. p. 444.
Acrochordonichthys zonatus, *Bleek. Prodr. Silur.* p. 230, and *Atl. Ichth. Silur.* p. 69. tab. 84. fig. 5.

D. 1/5. A. 10. P. 1/7.

The median groove on the upper surface of the head extends on to the base of the occipital process; there are a pair of shallow impressions on each side of the hinder part of the fonticulus; occipital process twice, or more than twice, as long as broad. The greatest width of the body is contained four times and three-fourths or five times in the total length. The maxillary barbels do not extend to the end of the opercle. Trunk and hinder half of the tail black.

Java.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

6. Acrochordonichthys ischnosoma.

Bleeker, Prodr. Silur. p. 232, and *Atl. Ichth. Silur.* p. 70. tab. 84. fig. 4.

D. 1/5. A. 10. P. 1/7.

The median groove on the upper surface of the head terminates at a considerable distance from the base of the occipital process; occipital process elongate-ovate. The greatest width of the body is contained five times and two-thirds in the total length. The maxillary barbels extend to the operculum. Entirely brownish.

Java.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

38. AKYSIS.

Akysis, *Bleek. Prodr. Silur.* p. 234.
Parabagrus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 100.

Adipose fin of moderate length; a short dorsal fin with one spine and five soft rays; anal fin short. Barbels eight. The upper jaw is somewhat longer than the lower; teeth villiform, palate edentulous. Head covered with soft skin above; skin tubercular; eyes very small, below the skin; a lateral line. Caudal emarginate or forked; pectorals horizontal; ventrals with six rays. Gill-opening of moderate width, extending upwards to the extremity of the opercle, the gill-membrane reaching across the isthmus, slightly emarginate behind.

Java.

1. Akysis ariegatus.

Pimelodus variegatus, *Bleek. Verh. Bat. Gen.* xxi., *Silur. Batav.* p. 53.
Akysis variegatus, *Bleek. Prodr. Silur.* p. 235, and *Atl. Ichth. Silur.* p. 65. tab. 83. fig. 1.

B. 6. D. 1/5. A. 9. P. 1/5–6.

The length of the head is one-fourth, or a little less than one-fourth, of the total (without caudal); the eyes are situated before the middle of the length of the head; the maxillary barbels extend to the root of the pectoral; the free portion of the tail is twice as long as high. Dorsal spine of moderate strength, a little shorter than the head; adipose fin longer than the dorsal, and equal in length to its distance from the dorsal; caudal forked. Yellow, with four broad, irregular brown cross-bands; fins and barbels variegated with brown.

Java.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

2. Akysis pusillus.

Pimelodus pusillus, *Ranzani, in Nov. Comm. Acad. Sc. Inst. Bonon.* 1842, v. p. 332. tab. 27. figs. 1–4.

D. 1/6. A. 10. P. 1/7 (?). V. 6.

Jaws subequal anteriorly; the maxillary barbels extend to the anal fin, the outer ones of the mandible to the base of the pectoral. The height of the body is nearly equal to the length of the head, and two-sevenths of the total (without caudal). Skin of the body with series of very small, distant tubercles. Dorsal spine slender, denticulated behind. Adipose fin short; caudal forked. (*Ranz.*)

Hab. —— ?

Although this species is known only from the description and figure quoted, it is not difficult to perceive its affinities: Dr. v. Bleeker saw in it the type of a distinct genus, *Parabagrus*, associating it with South American Pimelodes.

3. Akysis macronema.

Bleeker, Act. Soc. Sc. Ind. Neerl. ix. *Sumatra*, ix. p. 11, and *Atl. Ichth. Silur.* p. 65. tab. 84. fig. 1.

D. 1/5. A. 8. P. 1/5–6.

Head nearly as broad as long, its length being one-fourth of the total (without caudal). The nasal barbels extend to the end of the head, those of the maxillaries nearly to the end of the pectoral fin. The length of the adipose fin is one-half of its distance from the dorsal. Caudal forked.

Sumatra (Lahat).

a. Dr. P. v. Bleeker has sent us a specimen said to be one of the types, but differing so much in some of the generic characters, that we must consider it as belonging to *Clyptosternum*, or to a genus closely allied to it; its nostrils are not remote from each other, as they are represented to be in *Akysis*. However, it is not sufficiently well preserved that we can decide from its examination whether it is really one of the typical specimens and identical with the one figured, or whether some error has taken place, by which we have received a different species altogether.

Two genera are here appended, the characters of which are very insufficiently known; consequently their validity and their place in the system are very doubtful.

39. OLYRA.

Olyra, sp., *M'Clell. Calc. Journ. Nat. Hist.* ii. p. 588.

Head and body elongate, low; a longish adipose fin; dorsal fin short, with a spine and with seven soft rays; anal fin of moderate length, with more than twenty rays. Barbels eight. Head covered with soft skin above; eye small. Jaws subequal in length. Teeth villiform; palate edentulous. Gill-opening wide. Caudal lanceolate; ventral with six (?) rays, inserted below the dorsal fin.

Khasya.

1. Olyra longicaudata.

M'Clell. l. c. tab. 21. fig. 1.

B. 6? D. 1/7(?). A. 23. P. 1/6(?).

Pectoral spine strong, serrated along both edges; caudal prolonged. (*M'Clell.*)

Khasya Mountains.

40. BRANCHIOSTEUS.

Olyra, sp., *M'Clell.*
Branchiosteus, *Gill, Proc. Bost. Soc. Nat. Hist.* 1862, p. 52.

Head and body elongate, low; a longish adipose fin; dorsal fin short, with a spine and with six soft rays; anal fin of moderate length, with less than twenty rays. Barbels eight. Head covered with soft skin above; eye small. Lower jaw projecting. Teeth villiform; palate edentulous. Gill-opening wide. Caudal rounded; ventral with six (?) rays, inserted below the dorsal fin.

Khasya.

Mr. Gill has introduced a new generic name for M'Clelland's second species of *Olyra*, although its characters are still more doubtful than those of the first.

1. Branchiosteus laticeps.

Olyra laticeps, *M'Clell. Calc. Journ. Nat. Hist.* ii. p. 588. tab. 21. fig. 2.

B. 13? D. 1/6. A. 15. P. 9.

The anal rays gradually increase in length posteriorly. (*M'Clell.*)

Khasya Mountains.

c. Palate toothless; ventral rays eight or nine: AMIURINA.

41. AMIURUS *.

Cat-fishes.
Ameiurus, *Rafinesque, Ichth. Ohiens.* p. 65.
Ictalurus, *Rafinesque, l. c.* p. 64.

Adipose fin of moderate length; a short dorsal fin with a pungent spine and with six soft rays; anal fin of moderate length. Barbels eight. Palate edentulous. Generally the upper jaw is the longer· head covered with skin above. Ventral with eight rays.

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* 1. Pimelodus pullus, *Dekay, New York Fauna, Fishes*, p. 184. pl. 37. fig. 117.—New York.
2. —— felis, *Agass. Lake Superior*, p. 281.
3. —— vulpes, *Girard, Proc. Acad. Nat. Sc. Philad.* 1858, p. 90, and *Ichth. U. S. & Mex. Bound.* p. 33. pl. 18.—Texas.
4. —— antoniensis, *Girard, in U. S. Pacif. R. R. Expl. Fish.* p. 209.—Texas.
5. —— hoyi, *Girard, in Proc. Ac. Nat. Sc. Philad.* 1859, p. 159.—Wisconsin.
6. —— confinis, *Girard, l. c.*—Wisconsin.
7. —— cupreoides (!), *Girard, l. c.*—Illinois.
8. —— lynx, *Girard, l. c.* p. 160.—Potomac.
9. —— puma, *Girard, l. c.*—Charleston.
10. —— vulpeculus, *Girard, l. c.*—Charleston.
11. —— platycephalus, *Girard, l. c.* p. 161.—South Carolina.
12. —— megalops, *Girard, l. c.*—Alabama.
13. —— notatus, *Abbott, in Proc. Ac. Nat. Sc. Philad.* 1860, p. 569.—Kansas.

North America, China.

This genus has been divided into the following groups:—

a. Caudal fin subtruncated or but slightly emarginate: *Amiurus*, p. 99.
β. Caudal fin deeply forked: *Ictalurus*, p. 101.

a. Caudal fin subtruncated or but slightly emarginate.

1. **Amiurus catus.**

Silurus catus, *L. Syst. Nat.* i. p. 504; *Bl. Schn.* p. 387; *Mitch. Journ. Lit. & Phil. Soc. New York*, i. p. 433.
Pimelodus albidus, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 148; *Cuv. & Val.* xv. p. 131.
? Pimelodus xanthocephalus, *Rafin. Ichth. Ohiens.* p. 66.
Pimelodus catus, *Cuv. & Val.* xv. p. 124. pl. 432; *Dekay, New York Fauna, Fishes*, p. 182. pl. 37. fig. 119; *Girard, in Proc. Acad. Nat. Sc. Philad.* 1859, p. 160.
The horned Pout, *Storer, Rep. Fish. Massach.* p. 102.
Pimelodus atrarius, *Dekay, l. c.* p. 185. pl. 36. fig. 116.
—— catulus, *Girard, in U. S. Pacif. R. R. Expl. Fish.* p. 208. pl. 41. figs. 4–6 (incorrect).
—— dekayi, *Girard, in Proc. Acad. Nat. Sc. Philad.* 1859. p. 160.

B. 8–9. D. 1/6. A. (19) 20–22. P. 1/9. Vert. 11/26.

Head not much longer than broad; the upper jaw is a little longer than the lower; the maxillary barbels extend to, or nearly to, the end of the head in adult specimens, and beyond it in immature ones. Dorsal and pectoral spines short, one-half or less than one-half of the length of the head; pectoral spine stoutish, denticulated interiorly. Adipose fin short; caudal subtruncated.

North America.

a. Fine specimen. Boston. Presented by W. Winstone, Esq.
b, c. Half-grown. New York. Purchased of Mr. Brandt.
d. Half-grown: skin. Ohio Canal, near Piketon. From Dr. Parnell's Collection.
e, f, g–h, i. Adult and young. North America.

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14. Pimelodus guttatus, *Lacép.* v. pp. 96 & 113. pl. 5. fig. 1; *Cuv. & Val.* xv. p. 143; *Richards. Ichth. Chin.* p. 285.—China.
15. —— gracilis, *Hough, in Fifth Ann. Rep. of the Regents of the University on the Condition of the State Cabinet of Nat. Hist. &c., Albany*, 1852, p. 26; Pimelodus houghi, *Girard, in Proc. Acad. Nat. Sc. Philad.* 1859, p. 159.—New York, Pennsylvania.
16. Synechoglanis beadlei, *Gill, in Ann. Lyc. Nat. Hist. New York*, 1859, p. 40. —St. Catherine's, Canada West.
17. Amiurus obesus, *Gill, in Proc. Bost. Soc. Nat. Hist.* 1862, p. 45.—? Nebraska.
18. Pimelodus maculatus, *Rafin. Ichth. Ohiens.* p. 62; P. cœrulescens, *Rafin. l. c.* p. 63; P. pallidus, *Rafin. l. c.*—Ohio.
19. —— cupreus, *Rafin. Ichth. Ohiens.* p. 65.—Ohio.

2. **Amiurus cantonensis.**

Pimelodus cantonensis, *Cuv. & Val.* xv. p. 142.

D. 1/6. A. 19.

This species appears to be extremely similar to *A. catus*; having only one example, which is rather deformed by stuffing, we are not able to point out its distinctive characters. It seems to be more elongate, the height of the body being contained five times and a third in the total length (without caudal); its ventral is inserted at some distance behind the dorsal. However, these characters may not be found in well-preserved specimens.

China.

a. Adult. Presented by J. R. Reeves, Esq.

3. **Amiurus nigricans.**

Pimelodus nigricans, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 153. pl. 16. fig. 3; *Cuv. & Val.* xv. p. 133; *Dekay, New York Fauna, Fishes,* p. 180. pl. 52. fig. 170; *Hyrtl, Denkschr. Acad. Wiss. Wien,* 1859, xvi. p. 16.

? Pimelodus cœnosus, *Richards. Faun. Bor.-Amer. Fish.* p. 132; *Cuv. & Val.* xv. p. 129.

Pimelodus nigrescens, *Richards. l. c.* p. 134.

—— felinus, *Girard, in U. S. Pacif. R. R. Expl. Fish.* p. 209.

B. 8. D. 1/6. A. 25. P. 1/9. Vert. 16/30 (*Hyrtl*).

Head one-fourth longer than broad; the maxillary barbels extend to, or somewhat beyond, the end of the head. Dorsal and pectoral spines short, less than one-half of the length of the head; pectoral spine stoutish, denticulated interiorly. Adipose fin short; caudal truncated.

Northern lakes of America.

a. Fine specimen.

4. **Amiurus borealis.**

The Mathemeg or Land-cod.

Pimelodus borealis, *Richards. Faun. Bor.-Amer. Fish.* p. 135.

D. 1/6. A. 25.

Head as broad as long; the maxillary barbels extend to the gill-opening; pectoral spine not denticulated; caudal fin slightly emarginate. (*Richards.*)

Pine Island Lake.

5. **Amiurus ailurus.**

Pimelodus ailurus, *Girard, in U. S. Pacif. R. R. Exped. Fish.* p. 210. pl. 44.

D. 1/6. A. 22. P. 1/8.

The lower jaw is the longer. The maxillary barbels extend somewhat beyond the gill-opening; dorsal and pectoral spines serrated; caudal somewhat emarginate. (*Girard.*)

Minnesota.

6. **Amiurus punctulatus.**

? Pimelodus æneus, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 150; *Cuv. & Val.* xv. p. 135.
Pimelodus punctulatus, *Cuv. & Val.* xv. p. 135.

B. 12. D. 1/6. A. 16. P. $\frac{1}{10-11}$. V. 8.

The lower jaw is the longer; head one-fifth longer than broad, much depressed, one-fourth of the total length (with the caudal); the maxillary barbel has a broad base, and does not extend to the end of the head. Dorsal spine feeble, not serrated; pectoral spine stronger, half as long as the fin. Caudal truncated. Brown, finely marbled with black. (*Val.*)

New Harmony, New Orleans.

7. **Amiurus natalis.**

Pimelodus natalis, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 154.

Caudal fin subtruncated; the tail between the adipose and anal fins compressed, as high as the body below the dorsal fin*.

North America.

β. Caudal fin deeply forked.

8. **Amiurus nebulosus.**

? Pimelodus nebulosus, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 149.
Pimelodus nebulosus, *Cuv. & Val.* xv. p. 132.

B. 8. D. 1/6. A. 20–21. P. 1/8.

Head not much longer than broad; the maxillary barbel extends to the end of the head. Dorsal and pectoral spines short, the latter considerably stronger than the former, half as long as the head, and serrated interiorly. Adipose fin short; caudal distinctly forked.

North America.

a–b. Adult: stuffed. Presented by E. Doubleday, Esq.

We can scarcely doubt that we are correct in identifying our specimens with the *P. nebulosus* of Valenciennes; but it is not probable that *P. nebulosus* of Lesueur is the same species, as that author describes the caudal fin as truncated or nearly truncated, whilst the specimens examined by Valenciennes and by myself have a distinctly forked caudal.

9. **Amiurus lupus.**

Pimelodus lupus, *Girard, in U. S. Pacif. R. R. Exped. Fish.* p. 211.

D. 1/6. A. 24. P. 1/9.

The maxillary barbels extend to about the middle of the pectoral fin. Dorsal spine very obtusely denticulated towards its extremity, pectoral spine very conspicuously so; caudal fin moderately forked. (*Girard.*)

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* Many specimens of Pimelodes with an adipose fin have a layer of fat deposited along the back of the tail, so that this part appears unusually elevated. It is not impossible that Lesueur founded the *P. natalis* on such a specimen.

Source of the Rio Pecos.

Pimelodus hammondii, Abbott, Proc. Acad. Nat. Sc. Philad. 1860, p. 568, appears to have a comparatively smaller head than *P. lupus*, constituting somewhat less than one-fifth of the total length, whilst it is said to be one-fourth in *P. lupus*.—Kansas.

Ictalurus simpsonii, Gill, Proc. Bost. Soc. Nat. Hist. 1862, p. 43, appears to me to be identical with *P. hammondii*.

10. Amiurus cauda-furcatus.

Pimelodus cauda-furcatus, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 152 (not *P. furcatus*, Cuv. & Val.).
—— furcifer, *Cuv. & Val.* xv. p. 139; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 16; *Kner, Sitzgsber. Acad. Wiss. Wien*, xxvi. p. 421.
—— olivaceus, *Girard, in U. S. Pacif. R. R. Exped. Fish.* p. 211. pl. 41. figs. 1–3, and pl. 42 (incorrect).
—— graciosus, *Girard, in Proc. Acad. Nat. Sc. Philad.* 1859, p. 161.

B. 8. D. 1/6. A. 26–27. P. 1/9. Vert. 13/29 (*C. & V.*), 15/30 (*Hyrtl*).

Head one-fourth longer than broad; the maxillary barbels extend beyond the end of the head. Dorsal spine as long as the head without snout; pectoral spine stronger and rather longer than that of the dorsal fin, denticulated interiorly. Adipose fin short; caudal deeply forked.

Ohio, Missouri, and Arkansas Rivers. Surinam (?).

a. Half-grown: skin. Ohio Canal. From Dr. Parnell's Collection.
b. Half-grown: skin. Portsmouth, Ohio River. From Dr. Parnell's Collection.
c–d. Adult and young: bad state.

11. Amiurus meridionalis.

D. 1/6. A. 28–29. P. 1/9.

Head one-half or one-third longer than broad; the maxillary barbels extend to the end of the head. The length of the dorsal spine is somewhat less than that of the head without snout, and nearly equal to that of the pectoral spine. Adipose fin short.

The height of the body is one-fifth of the total length (without caudal), the length of the head one-fourth or two-ninths. Snout obtusely rounded, with the upper jaw longer than the lower. The diameter of the eye is one-half or two-fifths of the extent of the snout, and one-third or two-sevenths of the length of the postorbital portion of the head. The band of maxillary teeth is five or six times as broad as long. The outer mandibulary barbels extend to the posterior margin of the gill-membrane. The distance of the dorsal spine from the snout is a little more than one-half of its distance from the caudal fin; it is finely serrated behind. The length of the base of the adipose fin equals that of the dorsal. Caudal fin deeply forked; the upper lobe is somewhat the longer, its length being equal to, or a little less than, that of the head. The anal fin terminates behind the adipose fin, and its last rays do not extend to the base of the caudal. Axil of the pectoral with a very distinct porus mucosus. The pectoral spine is serrated interiorly, sometimes a little longer, sometimes a little shorter, but always rather stronger than that of the dorsal fin. Pectoral fin longer than ventral, two-thirds or three-fifths of the length of the head. The ventral extends to the origin of the anal. Upper parts brownish, with steel-blue reflexions; lower parts silvery, with a reddish tinge.

Guatemala.

a–c. Adult (15 inches long) and half-grown. Rio Usumacinta. From Mr. Salvin's Collection.

12. Amiurus furcatus.

Pimelodus furcatus, *Cuv. & Val.* xv. p. 136 (not *P. cauda-furcatus*, Lesueur).

B. 8. D. 1/6. A. 32–34. P. 1/10.

Head one-fourth longer than broad; the maxillary barbels do not extend to the end of the head. Dorsal spine long, rather slender, three-fourths of the length of the head; pectoral spine shorter, but stronger, than that of the dorsal fin, denticulated interiorly. Adipose fin short; caudal deeply forked.

Mississippi.

a. Half-grown: skin. Mississippi. From Dr. Parnell's Collection.

13. Amiurus affinis.

Pimelodus affinis, *Baird & Girard, in Proc. Acad. Nat. Sc. Philad.* 1854, p. 26, and *Ichth. U. S. & Mex. Bound.* p. 32. pls. 16 & 17.

D. 1/6. A. 35. P. 1/10.

The length of the head is two-ninths of the total (without caudal), the length of the anal one-third. Adipose fin short; caudal deeply forked. The maxillary barbels extend beyond the base of the pectorals.

Texas.

a. Half-grown. Presented by the Smithsonian Institution

42. HOPLADELUS.

Leptops, Opladelus, Ilictis, Pylodictis, etc., *Rafinesque, Ichth. Ohiens.* pp. 64–67.

Hopladelus, *Gill, Proc. Bost. Soc. Nat. Hist.* 1862, p. 51.

Adipose fin short and thick; dorsal fin short, with a spine concealed in the skin and with six rays; anal fin of moderate length; barbels eight; the lower jaw is the longer. Palate edentulous. Head depressed, oblong, covered with thick skin. Caudal fin slightly emarginate; ventral rays nine. Branchiostegals twelve.

North America.

The above characters given by Mr. Gill comprise almost everything that is known, and that may be relied upon, of the fishes of this genus. With regard to the species, the North American writers have left us in the dark up to the present time, Rafinesquian descriptions, headed by such specific names as *olivaris, viscosus, nebulosus, limosus,* forming the principal portion of the literature existing on this subject.

43. NOTURUS*.

Noturus, *Rafinesque, Ichth. Ohiens.* p. 67.
Schilbeoides, *Bleek. Act. Soc. Sc. Indo-Nederl.* iv. p. 258.

Adipose fin low, long, cariniform, generally confluent with a series of rudimentary caudal rays running along the free portion of the tail; a short dorsal fin with a pungent spine and with seven soft rays; anal fin of moderate length. Barbels eight. The upper jaw is the longer. Palate edentulous. Head covered with thick skin above, occipital process very short. Caudal fin obliquely truncated; ventral rays nine.

North America.

1. Noturus lemniscatus.

Pimelode livrée, *Lesueur, Mém. Mus. d'Hist. Nat.* 1819, v. p. 155.
Pimelodus lemniscatus, *Cuv. & Val.* xv. p. 144.
Noturus lemniscatus, *Girard, in Proc. Ac. Nat. Sc. Philad.* 1859, p. 158.

B. 8. D. 1/7. A. 21. P. 1/10. V. 9.

Head nearly as broad as long, one-fifth of the total length; the diameter of the eye is one-fourth of the width of the interorbital space. The maxillary barbel does not extend to the end of the head. Dorsal and pectoral spines stout, one-half of the length of the soft portions of the fins, scarcely denticulated. Adipose fin continuous with the caudal. (*Val.*)

North America.

2. Noturus flavus.

Rafinesque, Ichth. Ohiens. p. 68.

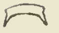
D. 1/7. A. 14. P. 1/7.

Barbels half the length of the head; adipose fin continuous with the caudal, which is truncate. Entirely yellowish. (*Raf.*)

Ohio.

3. Noturus platycephalus.

D. 1/7. A. 16. P. 1/11. V. 9.

Head only a little longer than broad, much depressed, its length being contained once and a third in the total (without caudal); the maxillary barbel extends to the root of the pectoral. There is a shallow notch between the adipose fin and the caudal. The distance between the joint of the pectoral spine and the root of the outer ventral ray is more than the distance between the latter and the caudal fin. The band of intermaxillary teeth () has a slender process on each side directed backwards.

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* 1. Silurus gyrinus, *Mitch., in Amer. Monthl. Mag. and Crit. Review,* 1818, *March,* p. 322.—New York.

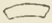
North America.

a–b. From 3 to 4 inches long. Old Collection.

4. Noturus occidentalis.

Gill, in Proc. Bost. Soc. Nat. Hist. 1862, p. 45.

B. 9. D. 1/7. A. 17–18. P. 1/10. V. 9.

Head considerably longer than broad, its length being contained four times and a third in the total (without caudal); the maxillary barbel reaches scarcely to the base of the pectoral. There is a shallow notch between the adipose fin and the caudal. The distance between the joint of the pectoral spine and the root of the ventral is less than the distance between the latter and the caudal fin. The band of intermaxillary teeth () has no slender lateral process.

Platte River.

a–b. Young. Presented by the Smithsonian Institution.

Seventh Group. PIMELODINA.

Proteropterous Siluroids with the anterior and posterior nostrils remote from each other, and without nasal barbel.

44. SORUBIM.

Sorubim, sp., *Spix*.
Platystoma, sp., *Agassiz*.
Sorubim, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 98.

Adipose fin short; a short dorsal fin with a pungent spine and with six or seven soft rays; anal fin of moderate length. Snout very long, spatulate, with the upper jaw projecting, and covered with villiform teeth below. Eyes partly directed downwards. The upper surface of the head not covered by the skin. Barbels six. Caudal forked; ventrals with six rays, inserted behind the dorsal. Gill-membranes not united.

Brazil.

1. Sorubim lima.

Silurus lima, *Bl. Schn.* p. 384.
Sorubim infraocularis, *Spix, Pisc. Bras.* pl. 15.
Platystoma lima, *Agass. in Spix, Pisc. Bras.* p. 24; *Cuv. & Val.* xv. p. 7; *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 399.

B. 15–16. D. $\frac{2}{(6-)\,7}$. A. 20–22. P. $\frac{1}{7-9}$.

The greatest width of the head is two-fifths of its length. The length of the projecting portion of the upper jaw is nearly equal to the distance of the eye from the angle of the mouth. Teeth on the palate in four groups: two triangular on the vomer, and one oblong on each palatine bone. The maxillary barbel extends to the middle of the pectoral, the outer of the mandible to the gill-opening. Brownish above, with small blackish spots; a dark band along the middle of the side.

Brázil.

45. PLATYSTOMA*.

Platystoma, *Agass., in Spix, Pisc. Bras.* p. 21.
Brachyplatystoma, Pseudoplatystoma, Hemiplatystoma, Sorubimichthys, *Bleck. Nederl. Tydschr. Dierk.* 1863, p. 21.

Adipose fin of moderate length; a short dorsal fin with a pungent spine and with six or seven soft rays; anal fin rather short. Snout very long, spatulate, with the upper jaw more or less projecting. Eyes lateral or directed upwards. The upper surface of the head is not covered by the skin. Barbels six. Caudal forked; ventrals with six rays, inserted behind the dorsal. Gill-membranes not united.

South America.

1. **Platystoma planiceps.**

Sorubim pirauaca, *Spix, Pisc. Bras.* pl. 12.
Platystoma planiceps, *Agass., in Spix, Pisc. Bras.* p. 25; *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 400.

D. 1/6. A. 10. P. 1/10.

The upper jaw projects much beyond the lower. The maxillary barbels extend to the anal fin, the outer ones of the mandible to the gill-opening. Eyes nearer to the end of the snout than to the angle of the operculum. The width of the snout between the maxillary barbels is one-half of the length of the head. Dorsal spine serrated behind. Caudal lobes pointed. Dark olive above; head, back, dorsal and pectoral fins with black dots; an interrupted blackish longitudinal band from the axil of the pectoral to the base of the anal. The lower caudal lobe black, the upper with a whitish margin.

Rivers Amazons, Solimoëns, Rio Negro.

2. **Platystoma spatula.**

Sorubim jandia, *Spix, Pisc. Bras.* pl. 14.
Platystoma spatula, *Agass., in Spix, Pisc. Bras.* p. 26.

D. 1/6. A. 10. P. 1/10.

The upper jaw projects much beyond the lower. The maxillary barbels extend on to the ventrals. Dorsal spine serrated. Uniform brownish; head, dorsal, pectoral and ventral fins with numerous black dots. (*Ag.*)

Brazil.

3. **Platystoma artedii.**

Mystus, no. 6, *Artedi, in Seba*, iii. p. 84. tab. 29. fig. 6.
Mystus, no. 386, *Gronov. Zoophyl.* p. 125.

D. 1/6. A. 13–14. P. 1/9.

The upper jaw projects much beyond the lower. The maxillary barbels are much longer than the head, and the others also exceed the head in length. Brownish above, spotted with darker, the lower parts whitish; fins with black dots.

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* 1. Platystoma emarginatum, *C. & V.* xv. p. 25.—River San Francisco.

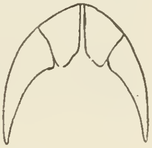
South America.

4. **Platystoma fasciatum.**

Silurus fasciatus, part., *L. Syst. Nat.* i. p. 505.
Silurus fasciatus, *Bl.* taf. 366; *Bl. Schn.* p. 382.
Platystoma fasciatum, *Cuv. & Val.* xv. p. 14; *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 401.
—— punctifer, *Casteln. Anim. Amér. Sud,* p. 40. pl. 19. fig. 2.

B. 15. D. 1/6. A. 14. P. 1/9.

The upper jaw projects but little beyond the lower. The maxillary barbels extend to, or nearly to, the ventrals, and the outer ones of the mandible as far, or still further, backwards. Brownish above, with blackish cross-bands edged with silvery; sometimes a longitudinal series of blackish ocelli below the lateral line. Vertical and ventral fins with black dots. Teeth on the palate in four more or less confluent patches: those on the vomer irregularly quadrangular; those on the palatines band-like, long, tapering behind.



South America.

a. Fine specimen. Essequibo. Purchased of Mr. Ehrhardt.
b. Half-grown. Surinam.
c. Two feet long. River Capin, Para. Purchased of Mr. Stevens.
d–e. Young. River Capin, Para. Purchased of Mr. Stevens.

5. **Platystoma tigrinum.**

Cuv. & Val. xv. p. 10. pl. 422.

B. 16. D. 1/6. A. 11. P. 1/9.

The upper jaw projects but little beyond the lower. The teeth on the palate form one-half of an ellipse, the front part of which is very broad, and produced into an obtuse lobe at its extremity; its branches are prolonged behind. The maxillary barbels extend to the gill-opening. Dorsal spine not serrated. Body with irregular, undulated, transverse blackish-brown bands; vertical and ventral fins with black dots. (*Val.*)

Brazil.

6. **Platystoma orbignianum.**

Valenc. in d'Orbig. Voy. Amér. Mérid. Poiss. pl. 4. fig. 3; *Cuv. & Val.* xv. p. 12.

B. 17. D. 1/6. A. 14. P. 1/9.

The upper jaw projects but little beyond the lower. Teeth on the palate in four subcontiguous patches: those on the vomer subtriangular; those on the palatines subcuneiform, tapering behind. The maxillary barbel does not extend to the end of the head, the outer of the mandible reaches to the root of the pectoral. The dorsal spine is scarcely stouter than the rays, and not serrated; the pectoral spine is much stronger, serrated interiorly, two-fifths of the length of the head. Brownish above, with numerous ovate black spots, as large as, or larger than, the eyes; sides with silvery patches; dorsal and caudal fins with black dots.

Southern Brazil.

a. Skin, 3 feet long. From a Collection made by Ch. Cumberland, Esq., on the river Cipo, a tributary of the Rio dos Vilhas which falls into the San Francisco. Minas Geraës.

7. **Platystoma coruscans.**

Marcgr. Hist. Bras. Pisc. p. 174 (lower figure), copied by *Willughby*, tab. H. 7. fig. 2.
Sorubim caparari, *Spix, Pisc. Bras.* pl. 13.
Platystoma coruscans, *Agass., in Spix, Pisc. Bras.* p. 26.

D. 1/6. A. 10. P. 1/10.

The upper jaw projects but little beyond the lower. The maxillary barbels extend on to the ventrals. Yellowish above, with numerous blackish ocelli, as large as, or smaller than, the eye; head immaculate; dorsal and caudal fins with black dots. (*Ag.*)

River San Francisco.

8. **Platystoma pardale.**

Valenc. in d'Orbig. Voy. Amér. Mérid. Poiss. pl. 4. fig. 2; *Cuv. & Val.* xv. p. 15.

B. 16–17. D. 1/6. A. 13–14. P. 1/9.

The upper jaw projects but little beyond the lower. Teeth as in *Pl. tigrinum.* The maxillary barbels extend to the præoperculum, the outer of the mandible a little further backwards. Brownish; body and fins covered with numerous very small black spots. (*Val.*)

Buenos Ayres.

9. **Platystoma truncatum.**

Agass., in Spix, Pisc. Bras. p. 27. tab. 13 *a*; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17.

D. 1/6. A. 10. P. 1/10. Vert. 13/33 (*Hyrtl*).

The upper jaw projects but little beyond the lower. The maxillary barbel extends to the middle of the pectoral, the outer ones of the mandible nearly to the gill-opening. Dorsal spine serrated behind. Adipose fin very low. Uniform yellowish; dorsal and caudal fins with black dots. (*Ag.*)

Rivers Japura and Solimoëns.

10. **Platystoma vaillantii.**

Cuv. & Val. xv. p. 21. pl. 423; *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 397.

B. 11. D. 1/6. A. 13. P. 1/10. Vert. 14/28.

The upper jaw projects but little beyond the lower. The maxillary barbel extends on to the caudal fin, which sometimes is much prolonged, the outer mandibulary barbel to the ventral or anal. Eye in the middle of the length of the head. Dorsal spine slender, scarcely serrated behind; pectoral spine very slender, four-fifths of the length of the head; adipose fin longer than the anal. Uniform brownish.

Cayenne and Surinam.

a. Adult: stuffed. Demerara. Purchased of Mr. Scrivener.
b–c. Adult. Demerara. Purchased of Mr. Scrivener.

11. Platystoma affine.

Cuv. & Val. xv. p. 24.

B. 11. D. 1/6. A. 13.

The upper jaw projects but little beyond the lower. The maxillary barbels extend on to the anal fin. The occipital process does not meet the basal bone of the dorsal spine. Adipose fin rather shorter than anal. Coloration uniform. (*Val.*)

Hab. ——?

46. HEMISORUBIM.

Platystoma, sp., *Cuv. & Val.*
Hemisorubim, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 97.

Adipose fin rather long; a short dorsal fin with a pungent spine and with six soft rays; anal fin rather short. Snout very long, spatulate, with the lower jaw longest. Eyes directed upwards. Teeth on the palate. The upper surface of the head is not covered by the skin. Barbels six. Caudal forked; ventrals with six rays. Gill-membranes not united.

Brazil.

1. Hemisorubim platyrhynchus.

Platystoma platyrhynchos, *Cuv. & Val.* xv. p. 27; *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 398.

B. 10–11. D. 1/6. A. 11–12. P. 1/9.

Vomerine teeth in a semicircular band, palatine teeth in longitudinal bands. The occipital process is narrow, and meets the basal bone of the dorsal spine. Dorsal spine slender, finely serrated. The maxillary barbel extends to, or beyond, the ventral. A series of five or six rounded blackish spots on each side.

Rio Negro.

47. PLATYSTOMATICHTHYS.

Platystoma, sp., *Kner.*
Platystomatichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 98.

Adipose fin of moderate length; a short dorsal fin with a pungent spine and with six soft rays; anal fin rather short. Snout very long, spatulate, with the upper jaw much produced. Eyes with a free orbital edge. Teeth on the palate. The upper surface of the head is not covered by the skin. Barbels six. Caudal forked; ventrals with six rays, inserted below the last dorsal rays. Gill-membranes not united.

Brazil.

1. **Platystomatichthys sturio.**

Platystoma sturio, *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 395. fig. 9.

B. 9. D. 1/6. A. 15. P. 1/9.

The projecting part of the upper jaw is two-fifths of the length of the head, and densely covered with villiform teeth below. The maxillary barbels are one-third longer than the whole fish. Adipose fin rather longer than anal.

Rio Branco.

48. PHRACTOCEPHALUS.

Phractocephalus, *Agass., in Spix, Pisc. Bras.* p. 22.

Adipose fin subdivided into rays, without spine; a short dorsal fin with a pungent spine and with seven soft rays; anal fin short. Barbels six. Patches of villiform teeth on the palate; the upper jaw is the longer. Caudal forked; ventral with six rays.

Tropical America.

1. **Phractocephalus hemiliopterus.**

Silurus hemiliopterus, *Bl. Schn.* p. 385.
Pirarara bicolor, *Spix, Pisc. Bras.* tab. 6.
Phractocephalus bicolor, *Agass. in Spix, Pisc. Bras.* p. 23.
—— hemiliopterus, *Cuv. & Val.* xv. p. 3. pl. 421.

B. 9. D. 1/7. A. 9. P. 1/9.

Occipital process very large, semicircular; basal bone of the first dorsal spine large, kidney-shaped. Dorsal spine not serrated. Brownish black above, greyish below, both colours separated by a white lateral band; the upper parts of the head with black spots; fins black. Vomerine teeth in a large pentagonal patch, those of the palatine bones in a tapering band.

Brazils.

a. Thirty-eight inches long: stuffed.
b. Fine specimen. River Cupai (Amazon), 800 miles from the sea. Purchased of Mr. Stevens.

49. PIRAMUTANA.

Piramutana et Pseudariodes, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 99.

A long adipose fin; a short dorsal fin with a pungent spine and with six soft rays; anal fin short. Barbels six. Teeth on the palate; jaws equal in length. The upper surface of the head granular. Caudal forked; ventrals with six rays, inserted below the end of the dorsal.

Brazil.

1. **Piramutana piramuta.**

Bagrus piramuta, *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 382.
Piramutana piramuta, *Bleek. l. c.*

B. 12–13. D. 1/6. A. 14. P. 1/10.

Head nearly as high as broad, its greatest width being two-thirds of its length. Eye small, in the middle of the length of the head, directed upwards. The occipital process extends one-quarter of the length of the head further backwards than the margins of the occiput, nearly to the basal bone of the dorsal spine, and is almost as broad behind as at its base. The teeth on the vomer form a band, which is separate from those of the palatines. Dorsal spine striated, not serrated, shorter than the dorsal rays, which are one-third lower than the body. Pectoral spine slightly serrated interiorly, as long as the first soft rays and as the rays of the dorsal fin. Ventrals as long as pectorals; adipose fin nearly twice as long as anal. Caudal deeply forked, with the upper lobe produced into a filament. The maxillary barbels extend to below the adipose fin, the outer ones of the mandible beyond the middle of the pectoral. (*Kner.*)

Barra do Rio Negro and Borba Rio Madeira.

2. **Piramutana blochii.**

Silurus clarias, *Bl.* taf. 35. figs. 1, 2 (not *L.*).
—— callarias, part., *Bl. Schn.* p. 379.
Pimelodus blochii, *Cuv. & Val.* xv. p. 188.
Arius albicans, *Cuv. & Val.* xv. p. 80; *Valenc. in d'Orb. Voy. Amér. Mérid. Atl. Poiss.* pl. 3. fig. 2.
Ariodes clarias, *Müll. & Trosch. Hor. Ichth.* iii. p. 10.
Pseudariodes clarias, *Bleek. l. c.*

D. 1/6. A. 10–11.

The maxillary barbels extend beyond the ventral fins. Adipose fin twice as long as the anal. The teeth on the palate form a patch on each pterygoid bone, and there is sometimes another pair of very small patches on the vomer. Back light brown, with darker spots; a silvery band along the lateral line; sides below the band spotted like the back.

Guiana, Brazils.

50. **PLATYNEMATICHTHYS***.

Platynematichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 99.

Adipose fin of moderate length; a short dorsal fin with a strong spine and with six soft rays; anal fin short. Barbels six, broad, band-like. Vomer with a band of villiform teeth. Jaws equal in length. Eyes with a free orbital margin; skin not reticulated, covering the whole of the upper surface of the head and neck. Caudal forked; ventral with six rays.

Brazils.

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* 1. ? Galeichthys araguayensis, *Casteln. Anim. Amér. Sud, Poiss.* p. 37. pl. 17. fig. 3.—Araguay.

1. **Platynematichthys punctulatus.**

Bagrus punctulatus, *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 380.
—— nigro-punctatus, *Kner, in Wiegm. Arch.* 1858, p. 345.

D. 1/6. A. 16. P. 1/9.

The length of the head is one-fifth of the total (with the caudal), and equals the height of the body; the greatest width of the head equals the distance of the snout from the præoperculum. Jaws equal in length, armed with very broad bands of teeth, the bands extending to the outer surface of the jaws. Vomerine band of teeth broadest on the sides; palatines without teeth. Barbels very broad, bandlike; those of the maxillaries extend beyond the middle of the pectoral. Dorsal spine very long, bent, sabre-shaped; pectoral spine very strong, extending backwards to below the end of the dorsal. Brownish above, whitish below, the brownish part with roundish black spots. (*Kner.*)

Rio Guaporé and Rio Branco.

51. **PIRATINGA***.

Piratinga et Malacobagrus, *Bleek. Nederl. Tydschr. Dierk.* 1863, pp. 99 & 100.

Adipose fin of moderate length; a short dorsal fin with a more or less pungent spine and with six soft rays; anal fin short. Barbels six, filiform. Villiform bands of teeth on the palate. Jaws equal in length, or the upper the longer. Eyes with a free orbital margin. Skin reticulated, covering the whole of the upper surface of the head and neck. Caudal forked; ventral with six rays.

Tropical America.

1. **Piratinga filamentosa.**

Pimelodes filamentosus, *Lichtenst. in Wiedem. Zool. Mag.* i. pt. 3. p. 60.

B. 7. D. 7. A. 9. P. 11.

Head depressed, with the upper jaw prominent. The maxillary barbels are about thrice as long as the entire fish. The upper caudal rays produced into a very long filament. Dorsal and pectoral spines very feeble, scarcely pungent. Cleft of the mouth wide. (*Licht.*)

Brazil.

Not having seen either this species or the two following, I think it better to leave them united in one genus, as the distinctive characters known are of no greater value than those of the different species of *Pimelodus*. Also, Dr. v. Bleeker, who names this species *Malacobagrus*, and the two others *Piratinga*, has not pointed out any other characters besides those contained in the descriptions of Lichtenstein and Kner.

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* 1. Bagrus flavicans, *Casteln. Anim. Amér. Sud, Poiss.* p. 32. pl. 13. fig. 2, is so badly described that it is impossible to fix its position in the system.
2. —— rousseauxii, *Casteln.* p. 32. pl. 14. fig. 1, is another name given to some fish by the same collector.
3. —— punctulatus, *Casteln.* p. 33. pl. 14. fig. 2.

2. Piratinga reticulata.

Bagrus reticulatus, *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 376.

B. 12. D. 1/6. A. 12. P. 1/9.

The length of the head is nearly one-fourth of the total (with the caudal); it is much broader than high, its greatest width being three-fourths of its length; the upper jaw is the longer. The teeth on the palate form an arched band. Barbels six: those of the maxillaries extend beyond the base of the ventrals, the outer ones of the mandible to the root of the pectorals. Eye nearer to the præopercular limb than to the end of the snout. Dorsal fin as high as the body below; its spine terminates in a compressed filament, and is smooth anteriorly, and serrated posteriorly towards its point. Pectoral spine strong, striated, and serrated. Adipose fin longer than anal. (*Kner.*)

Salto Theotonio on the river Araguay, Forte do Rio Branco, Rio Madeira.

3. Piratinga goliath.

Bagrus goliath (*Heck.*), *Kner, l. c.* p. 379.

B. 12. D. 1/6. A. 11–12.

The length of the head is two-sevenths of the total (with the caudal); it is broader than high, and two-thirds as broad as long. Jaws equal in length anteriorly. The transverse band of vomerine teeth is broader than, and continuous with, the palatine band. Barbels six: those of the maxillaries extend on to the opercle, the outer ones of the mandible to the root of the pectoral. The eyes occupy the middle of the length of the head. Dorsal fin lower than the body below; its spine terminates in a compressed filament, and is smooth anteriorly, and serrated posteriorly towards its point. Pectoral spine strong, serrated interiorly. Adipose fin but little longer than anal. (*Kner.*)

Salto Theotonio (Brazil).

52. SCIADES.

Sciades, sp., *Müll. & Trosch. Hor. Ichth.* p. 6.
Leiarius et Sciadeichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 99.

Adipose fin rather long; dorsal fin with a pungent spine and with ten or eleven soft rays; anal fin short. Barbels six. Teeth on the palate villiform. The upper jaw is the longer. Eyes with a free orbital margin. Caudal forked; ventral rays six

Brazil.

1. Sciades pictus.

Müll. & Trosch. Hor. Ichth. iii. p. 8. tab. 1. fig. 1; *Kner, Sitzungsber. Wien. Acad.* xxvi. p. 386.

B. 9. D. 1/10. A. 10. P. 1/11.

Vomerine teeth in a narrow transverse band; an ovate patch of villiform teeth posteriorly on each side of the palate. Barbels very long. Dorsal fin elevated, with the spine slender and longer than the head. Adipose fin rather longer than the dorsal. Brownish, with two curved whitish longitudinal bands; large dark-brown spots on the dorsal fins; barbels annulated with white and brown.

Barra do Rio Negro.

2. Sciades longibarbis.

Arius (?) longibarbis, *Casteln. Anim. nouv. ou rares Amér. Sud*, p. 36. pl. 15. fig. 2.

D. 1/11. A. 9. P. 1/11. V. 1/5.

Teeth on the palate in two separate, transversely ovate groups. Barbels very long. Dorsal spine slender, much shorter than the head. Adipose fin as long as the dorsal. Body variegated with grey, black, and white. (*Casteln.*)

Amazons.

53. PIMELODUS[*].

Pimelodus, sp., *Lacép.*, *Cuv. & Val.*

Rhamdia, Pseudorhamdia, et Pseudopimelodus, *Bleeker, Nederl. Tydschr. Dierk.* 1863, p. 101.

Pimelonotus, Pimelodus, et Batrachoglanis, *Gill, Ann. Lyc. Nat. Hist. New York*, 1858, p. 387.

Adipose fin well developed; dorsal fin short, with a more or less pungent spine and with six, exceptionally with seven or eight, rays; anal fin short. Barbels six, subcylindrical or slightly compressed. Teeth villiform, in both jaws, in bands which are broader than long; palate edentulous. Nostrils distant. Gill-membranes separated by a deep notch at the throat. Ventrals six-rayed, inserted behind the dorsal.

Tropical America (Asia ?, Sandwich Islands ?).

We refer the numerous species of this genus to the following divisions, which, however, pass into one another by intermediate forms:—

A. Head granulated above; dorsal spine strong: *Pseudorhamdia*, sp., Bleek., p. 115.

B. Head not granulated; the occipital process extends on to the basal bone of the dorsal spine; dorsal spine feeble: *Pseudorhamdia*, sp., Bleek., p. 117.

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[*] 1. Pimelodus charus, *Cuv. & Val.* xv. p. 159.—Brazil.
2. —— zungaro, *Humboldt, Observ. Zool.* ii. p. 170. pl. 46. fig. 1; *C. & V.* xv. p. 160.—Zungaro humboldtii, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 101.—River Maragnon.—This fish is stated to have ten ventral rays.
3. —— argentinus, *Humboldt, Observ. Zool.* ii. p. 171.—Magdalena River.
4. —— velifer, *Humboldt, l. c.*—Magdalena River.
5. —— maculatus, *Schomb. Fish. Guian.* i. p. 175.—Rhamdia schomburgkii, *Bleek. Prodr. Silur.* p. 208.—Brazils, Guiana.
6. Laukidi, *Schomb. l. c.* p. 176.—Rhamdia laukidi, *Bleek. l. c.*—Brazil, Guiana.
7. Pimelodus insignis, *Schomb. l. c.* p. 180. pl. 6.—Rio Branco.—This fish is said to have ten ventral rays like *P. zungaro.*
8. —— bahianus, *Casteln. Anim. Amér. Sud, Poiss.* p. 35. pl. 16. fig. 2.—Bahia.

C. The occipital process does not extend on to the basal bone of the feeble dorsal spine; adipose fin longer than dorsal; body elongate: *Rhamdia*, Bleek.
  1. American species.
    a. Dorsal fin with six soft rays.
      α. The adipose fin is one-third, or more than one-third, of the total length (without caudal).
        aa. The maxillary barbels extend considerably beyond the origin of the adipose fin, p. 119.
        bb. The maxillary barbels extend to, or nearly to, the origin of the adipose fin, p. 123.
      β. The adipose fin is less than one-third of the total length (without caudal).
        aa. The tail above the anal fin is almost as high as the trunk, p. 126.
        bb. Tail gradually becoming lower from its commencement, p. 128.
    b. Dorsal fin with seven or eight soft rays, p. 131.
  2. Non-American species, p. 133.

D. The occipital process does not extend on to the basal bone of the dorsal spine; body short, stout: *Pseudopimelodus*, Bleek., p. 133.

E. The occipital process is short; body moderately elongate; adipose fin not longer than dorsal: *Amphilius*, m., p. 134.

A. Head granulated above; dorsal spine strong.

1. Pimelodus maculatus.

? *Seba*, iii. 29. 4.
? Mystus, sp., *Gronov. Mus. Ichth.* i. no. 84, and *Zoophyl.* no. 385.
Pimelodus maculatus, *Lacép.* v. pp. 94, 107; *d'Orb. Voy. Amér. Mérid. Poiss. Atl.* pl. 1. fig. 1 (not good); *Cuv. & Val.* xv. p. 192; *Kner, Sitzgsber. Wien. Acad.* xxvii. p. 413.
? Mystus ascita, *Gronov. Syst. ed. Gray*, p. 156 (not *Silurus ascita*, L.).
Pseudorhamdia ascita, *Bleek. Versl. & Meded. Acad. Wet. Amsterd.* 1862, xiv. p. 384.

D. 1/6. A. 12. P. 1/9. Vert. $\frac{13-14}{24}$.

Head bony above, granulated; occipital process convex, obtusely keeled, subtriangular, with the apex truncated, much longer than broad, joining the large saddle-shaped bone at the base of the dorsal spine. The maxillary barbel is as long as the fish. The length of the adipose fin is one-fifth of the total (without caudal). Dorsal and pectoral spines very strong, nearly equal in length, as long as, or longer than, the head; the pectoral spine is serrated. Caudal deeply forked.

Brazil, Surinam.

a. Adult. River Capin, Para. Purchased of Mr. Stevens.
b, c, d, e–f. Adult and half-grown. Surinam.
g. Adult. Surinam. Purchased of Mr. Frank (=*Ps. ascita*, Blkr.).
h–i. Half-grown. Demerara. Presented by Dr. Hancock.
k–l. Adult. Baranquilla, New Granada. From Mr. Rippon's Collection.

m. Adult. West Indies. Purchased of Mr. Scrivener.
n, *o–p*. Half-grown. South America.
q. Adult: stuffed.

2. Pimelodus ornatus.

Pimelodus ornatus, *Kner, Sitzgsber. Wien. Acad.* xxvi. p. 411. fig. 18.

D. 1/6. A. 13. P. 1/10.

Head finely granulated above; occipital process obtusely keeled, elongate, triangular, nearly twice as long as broad, extending on to the triangular basal bone of the dorsal spine, which is as long as broad at its base. The length of the adipose fin is one-fifth of the total (without caudal), and its distance from the dorsal is nearly equal to the length of the latter. The maxillary barbels extend to, or nearly to, the end of the tail, the outer ones of the mandible beyond the root of the pectoral.

Snout rather long, broad, depressed, with the upper jaw prominent; the band of intermaxillary teeth is very broad. The eyes are situated somewhat behind the middle of the head, and their diameter is two-thirds of the width of the interorbital space. Dorsal and pectoral spines of moderate strength, equal in length, half as long as the head; the pectoral spine is serrated along both edges. Caudal fin deeply forked. A broad brown band descends obliquely backwards from the nape of the neck; a whitish cross-band behind it; a brownish longitudinal band along the back, continued on the upper caudal lobe; another band along the lateral line; a large black ocellus anteriorly on the middle of the dorsal fin; the lower caudal lobe with a blackish band similar to that of the upper.

Brazil, Surinam.

a–b. Fine specimens. River Capin, Para. Purchased of Mr. Stevens.
c. Adult. Purchased of M. Parzudaki.

3. Pimelodus eques.

Pimelodus eques, *Müll. & Trosch. Hor. Ichth.* iii. p. 5.

B. 7. D. 1/6. A. 12. P. 1/9.

Head strongly granulated above; occipital process broader than long, extending on to the large triangular dorsal shield. Adipose fin twice as long as the dorsal. The maxillary barbels extend to the end of the caudal, the outer ones of the mandible to the end of the pectoral. The length of the head is less than one-fourth of the total (with the caudal); the upper jaw but little longer than the lower. The eyes occupy the middle of the head, and their diameter is two-thirds of the width of the interorbital space. The dorsal spine is slender, but little shorter than the rays, serrated. The lower caudal lobe is the longer. Pectoral spine serrated along both edges. A saddle-shaped black spot on the shoulder, below the commencement of the dorsal fin. (*M. & T.*)

Guiana.

B. Head not granulated; the occipital process reaches the basal bone of the dorsal spine, which is feeble.

4. Pimelodus cristatus.

Pimelodus cristatus, *Müll. & Trosch. Hor. Ichth.* iii. p. 4.

D. 1/6. A. 15. P. 1/9.

Head covered with very thin skin above; occipital process narrow, elongate, nearly thrice as long as broad, extending on to the small triangular basal bone of the dorsal spine. Adipose fin very long, two-fifths of the total length (without caudal); its distance from the dorsal fin is one-half of the length of the latter. The maxillary barbels extend beyond the origin of the adipose fin, the outer ones of the mandible beyond the extremity of the pectorals.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head four times and two-thirds; snout rather narrow, with the upper jaw somewhat longer than the lower; the band of intermaxillary teeth tapering on the sides, four times as broad as long. The eye is situated somewhat behind the middle of the head (its diameter is one-fourth of the length of the head, and equal to the width of the interorbital space*). Dorsal spine slender, nearly as long as the head, slightly serrated along both edges; dorsal fin nearly twice as high as long, and much higher than the body†. Pectoral spine serrated along both edges, three-fourths of the length of the head. Caudal fin cleft to the base, with the lower lobe longest. Coloration uniform.

Brazil, Guiana.

a. Eight inches long. Guiana. Presented by Sir R. Schomburgk.
b. Young River Capin, Para. Purchased of Mr. Stevens.
c–f. Adult, half-grown, and young. Essequibo River. Purchased of Mr. Ehrhardt.

5. Pimelodus modestus.

Pimelodus modestus, *Günth. Proc. Zool. Soc.* 1860, p. 239. pl. 10. fig. C.

B. 6. D. 1/6. A. 12. P. 1/8.

Head covered with a very thin membrane above; occipital process narrow, elongate, extending on to the small triangular basal bone of the dorsal spine. Adipose fin long, a little less than one-third of the total length (without caudal); its distance from the dorsal fin is less than the length of the latter. The maxillary barbels extend to the origin of the anal fin, the outer ones of the mandible to the middle of the pectoral fin.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head four times and two-thirds. The eye occupies the middle of the length of the head, of which its diameter is one-fourth, and equal to the width of the interorbital space. Dorsal fin somewhat higher than long; its spine is slender, a little more than half as long as the head, and somewhat shorter than that of the pectoral fin. Caudal fin forked, with the upper lobe longer. Coloration uniform.

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* In a specimen 8 inches long.

† In a specimen 13 inches long the dorsal is much enlarged, the second soft ray being nearly twice as long as the head.

Esmeraldas.

a–b. Types of the species. Purchased of Mr. Fraser.

6. Pimelodus elongatus.

Pimelodus elongatus, *Günth. Proc. Zool. Soc.* 1860, p. 238. pl. 10. fig. B.

B. 6. D. 1/6. A. 11. P. 1/9.

Head covered with a very thin membrane above; occipital process narrow, elongate, extending on to the small triangular basal bone of the dorsal spine. Adipose fin long, two-sevenths of the total length (without caudal); its distance from the dorsal fin is less than the length of the latter. The maxillary barbels extend nearly to the extremity, the outer ones of the mandible to the root of the pectoral fin.

The height of the body is one-sixth of the total length (without caudal), the length of the head rather more than one-fifth. The upper jaw is the longer; the eye is somewhat behind the middle of the length of the head, of which its diameter is one-fourth; the width of the interorbital space is rather more than the diameter of the eye. Dorsal fin higher than long; its spine is slender, two-thirds of the length of the head, and longer than that of the pectoral fin. Caudal fin cleft nearly to the base, with the upper lobe longer. An ill-defined blackish streak along the lateral line.

Esmeraldas.

a–b, *c–f*, *g–k*. Types of the species. From Mr. Fraser's Collection.

7. Pimelodus lateristriga.

Pimelodus lateristrigus, *Müll. & Trosch. Hor. Ichth.* iii. p. 3.

D. 1/6. A. 12. P. 1/9.

Head naked above; occipital process narrow, elongate, thrice as long as broad, extending on to the small triangular basal bone of the dorsal spine. Adipose fin long, two-sevenths of the total length (without caudal); its distance from the dorsal is equal to, or rather more than, the length of the latter. The maxillary barbels extend to the origin of the adipose fin, the outer ones of the mandible to the middle of the pectoral.

The length of the head is one-fifth of the total length (without caudal); eyes of moderate size, occupying the middle of the head. Dorsal fin much higher than long, with the spine slender, three-fourths of the length of the head. Pectoral spine rather shorter than that of the dorsal fin, strongly serrated along its inner edge, and with a few obtuse denticulations at the extremity of its outer edge. Caudal fin deeply cleft, with the lobes pointed, the upper being the longer. A blackish streak from the eye along the lateral line; dorsal fin with the usual whitish cross-band.

Brazil.

a–b. Five inches long. Brazil. Presented by Lord Stuart.

C. The occipital process does not extend on to the basal bone of the dorsal spine; body elongate.
  1. American species.
    a. Dorsal fin with six soft rays.
      a. The adipose fin is one-third, or more than one-third, of the total length (without caudal).
        aa. The maxillary barbels extend considerably beyond the origin of the adipose fin.

8. Pimelodus sebæ.

Seba, iii. pl. 29. fig. 5.

Mystus, sp., *Gronov. Mus. Ichth.* i. p. 34. no. 83, and *Zoophyl.* p. 125. no. 384.

Pimelodus sebæ, *Cuv. & Val.* xv. p. 169; *Kner, Sitzgsber. Acad. Wiss. Wien*, xxvi. p. 417; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 16.

D. 1/6. A. 12. P. 1/8. V. 6. Vert. 13/26.

Head covered with a very thin skin above, or almost naked; occipital process triangular, much longer than broad, not reaching the basal bone of the dorsal spine. Adipose fin very long, its length being contained twice and a third in the total (without caudal); it commences immediately behind the dorsal fin. Maxillary barbels extending on to the caudal, the outer ones of the mandible nearly to the ventral.

The height of the body is a little less than the length of the head, which is one-fifth of the total (without caudal); the lower jaw scarcely shorter than the upper; the band of intermaxillary teeth is about eight times as broad as long. The diameter of the eye is one-half of the width of the interorbital space. Dorsal fin with the spine very feeble, as long as high, or, in young specimens, rather higher than long. Pectoral spine serrated along both edges, as long as the head without snout. Caudal fin cleft to the base. Coloration uniform, dorsal fin blackish, with a white band across the basal portion.

South America.

a, b, c. Young. Demerara. Presented by Dr. Hancock.
d. Half-grown. British Guiana. From the International Exhibition 1862.
e. Adult: not good state. Brazils. Purchased of Mr. Frank.
f. Adult. South America. Presented by Sir R. Schomburgk.

9. Pimelodus mülleri.

? Pimelodus musculus, *Müll. & Trosch. Hor. Ichth.* iii. p. 4.

D. 1/6. A. 10–11. P. 1/9. V. 6.

Head covered with a very thin skin above; occipital process triangular, rather longer than broad, not reaching the basal bone of the dorsal spine. Adipose fin very long, its length being contained twice and a third in the total (without caudal); it commences at a very short distance from the dorsal. Maxillary barbels extending not quite to the caudal fin, the outer ones of the mandible to, or beyond, the extremity of the pectoral.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head four times and a quarter. The lower jaw is scarcely shorter than the upper; the band of intermaxillary teeth is about eight times as broad as long. The diameter of the eye is one-half of the width of the interorbital space. A small porus axillaris. Dorsal fin with the spine very feeble, higher than long. Pectoral spine serrated along both edges, as long as the head without snout. Caudal fin cleft to the base. Coloration uniform; dorsal fin with the usual whitish cross-band.

Brazil, Surinam.

a. Seven inches long. River Capin, Para. Purchased of Mr. Stevens.
b. Young. Para. Presented by R. Graham, Esq.
c. Half-grown. Surinam. Purchased of Mr. Frank.

10. **Pimelodus holomelas.**

D. 1/6. A. 9–10. P. 1/8. V. 6.

Head covered with skin above; occipital process triangular, considerably longer than broad, not reaching the basal bone of the dorsal spine. Adipose fin very long, its length being contained twice and a fourth or twice and a fifth in the total (without caudal); it commences at a short distance from the dorsal. Maxillary barbels extending beyond the commencement, or to the middle, of the adipose fin, the outer ones of the mandible to the middle of the pectoral.

The height of the body is contained five times and a half or five times and two-thirds in the total length (without caudal), the length of the head four times. The lower jaw is distinctly shorter than the upper; the band of intermaxillary teeth is seven times as broad as long. The diameter of the eye is one-half of the width of the interorbital space. No porus axillaris. Dorsal fin with the spine very feeble, scarcely higher than long. Pectoral spine serrated along both edges, as long as the head without snout. Caudal fin cleft to the base. Uniform black, with a brownish shade, somewhat lighter on the belly.

Essequibo.

a–d. Adult (12 inches long) and young. From Mr. Ehrhardt's Collection.

This species is closely allied to *P. mülleri*, but may be distinguished by a longer adipose fin, shorter barbels, longer head, lower dorsal fin, and by its dark colours.

11. Pimelodus stegelichii.

? Heterobranchus sex-tentaculatus, *Agass., in Spix, Pisc. Bras.* p. 28. tab. 11.

Pimelodus stegelichii, *Müll. & Trosch. Hor. Ichth.* iii. p. 3.

D. 1/6. A. 12. P. 1/9.

Head covered with thin skin above; occipital process triangular, much longer than broad, not reaching the basal bone of the dorsal spine. Adipose fin very long, two-fifths of the total length (without caudal); it commences and terminates at a very short distance from the dorsal and caudal fins. The maxillary barbels extend to the middle of the adipose fin, and the outer ones of the mandible to or beyond the extremity of the pectorals.

The height of the body is one-fifth or two-elevenths of the total length (without caudal), the length of the head rather less than one-fourth. Jaws subequal in length; the band of intermaxillary teeth eight times as broad as long. The diameter of the eye is two-fifths of the width of the interorbital space. Dorsal fin as high as long. Pectoral spine serrated along both edges, more than half as long as the head. Porus axillaris minute. The anal fin does not extend to the vertical from the end of the adipose fin if laid backwards. Caudal fin cleft nearly to the base. Dark brown; dorsal fin with the usual whitish cross-band.

Surinam.

a. Adult: stuffed. Demerara. From the Collection of the Zoological Society.

b. Adult. Surinam. Purchased of Mr. Frank.

12. Pimelodus gracilis.

Pimelodus gracilis, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 2. fig. 5; *Cuv. & Val.* xv. p. 181; *Kner, Sitzgsber. Acad. Wiss. Wien,* xxvi. p. 418.

D. 1/6. A. 12–13. P. 1/8.

Head covered with skin above*. The adipose fin is long, one-third of the total length (without caudal); it is separated from the dorsal by an interspace which equals the length of the latter. The maxillary barbels extend to the middle or to the end of the adipose fin, the outer ones of the mandible beyond the root of the pectoral.

The height of the body is rather less than one-sixth of the total length (without caudal), the length of the head two-ninths. Eye rather large, more than one-fifth of the length of the head. The upper jaw is the longer. Dorsal fin much higher than long, its spine being slender, three-fourths of the length of the head. Pectoral spine rather long, strongly serrated. Caudal fin deeply forked, with the upper lobe produced. A blackish band along the lateral line.

Brazils.

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* In the figure quoted, the occipital process is represented as joining the basal bone of the dorsal spine, whilst Valenciennes and Kner refer this species to that group of *Pimelodus* in which those two bones are separate.

13. Pimelodus guatemalensis.

D. 1/6. A. 13. P. 1/9.

Head covered with thin skin above. The adipose fin is long, two-fifths of the total length (without caudal); it is separated from the dorsal and caudal by a short interspace. The maxillary barbels extend to beyond the origin, or to the middle, of the adipose fin; the outer ones of the mandible to, or nearly to, the extremity of the pectoral.

The height of the body is one-sixth of the total length (without caudal), the length of the head one-fourth; the head is depressed, its greatest width being three-fourths of its length; the diameter of the eye is one-third of the extent of the snout, and two-fifths of the width of the interorbital space. The least depth of the tail is two-fifths of the length of the head. The lower jaw is a little shorter than the upper; the band of intermaxillary teeth six times as broad as long. Dorsal fin with the spine very feeble, scarcely higher than long. Pectoral fin short, half as long as the head; its spine is a little longer than that of the dorsal fin. No porus mucosus in the axil. Ventral fin a little shorter than the pectoral. The length of the anal equals that of the dorsal; its posterior rays extend to the end of the adipose fin if laid backwards. The lower caudal lobe is the longer, its length being rather more than one-sixth of the total. Brownish black, the lower parts whitish; dorsal fin with a very indistinct lighter longitudinal band.

Guatemala.

a–b. Twelve inches long. Huamuchal. Lakes with brackish water. From the Collection of Messrs. Godman and Salvin.

14. Pimelodus breviceps.

Pimelodus breviceps, *Kner, Sitzgsber. Wien. Acad.* xxvi. p. 418.

D. 1/6. A. 12. P. 1/8.

Head covered with thick skin. Adipose fin very long, commencing and terminating at a short distance from the dorsal and caudal. The maxillary barbels extend to the anal, the outer ones of the mandible to the posterior third of the pectoral.

Snout narrow, somewhat pointed; the length of the head is contained six times and a half in the total (with the caudal); the eyes are situated nearly in the middle of the head, their diameter being one-half of the width of the interorbital space. Dorsal fin more than twice as high as long. Porus axillaris small. Caudal fin deeply forked, with the upper lobe longest, its length being more than one-fifth of the total. (*Kner.*)

Marabitanos.

15. Pimelodus wilsoni.

Pimelenotus vilsoni, *Gill, in Ann. Lyc. Nat. Hist. New York*, 1858, p. 391.

D. 1/6. A. 10. P. 1/8.

Head covered with thin skin above, the occipital process does not extend on to the basal bone of the dorsal spine. Adipose fin very long, commencing at a short distance from the dorsal. The maxillary barbels reach to, or nearly to, the caudal fin. The length of the head is contained five times and two-thirds in the total (with the caudal); the diameter of the eye is one-fourth or one-fifth of the length of the head, and three-fourths of the width of the interorbital space. The upper jaw is shorter than the lower (?). Dorsal spine very slender; the ventrals are nearly under the last dorsal ray. Caudal forked, with the lower lobe longest. Dorsal fin with the usual white cross-band. (*Gill.*)

Trinidad.

bb. The maxillary barbels extend to, or nearly to, the origin of the adipose fin.

16. Pimelodus queleni.

Pimelodus queleni, *Quoy & Gaim. Voy. Uran. Zool.* p. 228. pl. 49. figs. 3 & 4.
—— sellonis, *Müll. & Trosch. Hor. Ichth.* iii. p. 2.

D. 1/6. A. 12. P. 1/8.

Head covered with thin skin above; occipital process triangular, much longer than broad, not reaching the basal bone of the dorsal spine. Adipose fin very long, its length being contained twice and two-thirds in the total (without caudal); its distance from the dorsal is one-fifth of its own length. The maxillary barbels extend to the origin of the adipose fin, the outer ones of the mandible to the middle of the pectoral.

The height of the body is one-sixth or rather more than one-sixth of the total length (without caudal), the length of the head one-fourth or somewhat less than one-fourth. The lower jaw is but little shorter than the upper; the band of intermaxillary teeth eight times as broad as long. The diameter of the eye is two-fifths of the width of the interorbital space. Dorsal fin with the spine very feeble, as high as long. Pectoral spine serrated along both edges, more than half as long as the head. No porus axillaris. The anal fin extends to the vertical from the end of the adipose fin if laid backwards. Caudal fin cleft nearly to the base; the lower lobe is somewhat the longer, its length being contained five times and a half in the total. Coloration uniform; dorsal fin with a whitish band across its base.

Brazil.

a. Half-grown. Brazil. Presented by Lord Stuart.

17. Pimelodus wuchereri.

D. 1/6. A. 11. P. 1/8.

Head covered with thick skin above. Adipose fin very long, its length being one-third of the total (without caudal); its distance from the dorsal is two-fifths of its own length. The maxillary barbels extend to the end of the dorsal, the outer ones of the mandible to the root of the pectoral.

The height of the body is one-sixth of the total length (without caudal), the length of the head rather more than one-fifth; head much depressed and broad, its greatest width being four-fifths of its length. Eye small; its diameter is one-third of the extent of the snout (which equals the width of the interorbital space), and two-sevenths of the postorbital part of the head. The lower jaw is a little shorter than the upper; the band of intermaxillary teeth is six times as broad as long. Dorsal fin with the spine feeble, longer than high; the base of the anal is a little shorter than that of the dorsal, and its rays do not extend quite so far backwards as the adipose fin. Pectoral as long as the head without snout; its spine is three-fourths as long as the fin. Ventral shorter than pectoral. No porus axillaris. Dark brown, with indistinct black spots; the dorsal and anal fins and the lower parts appear to have been ruddy during life.

Bahia.

a–d. From 6 to 10 inches long. From Dr. O. Wucherer's Collection.

18. **Pimelodus godmanni.**

D. 1/6. A. 13. P. 1/8. V. 6.

Head covered with soft skin above; occipital process triangular, much longer than broad, not reaching the basal bone of the dorsal spine. Adipose fin very long, one-third of the total length (without caudal); its distance from the dorsal is one-third of its own length. The maxillary barbels extend to the origin of the adipose fin, the outer ones of the mandible to the root of the pectoral.

The height of the body is one-sixth or rather more than one-sixth of the total length (without caudal), the length of the head one-fourth or somewhat less than one-fourth. The lower jaw is but little shorter than the upper; the band of intermaxillary teeth is about six times as broad as long. The diameter of the eye is two-fifths of the width of the interorbital space. Dorsal fin with the spine very feeble, rather higher than long. Pectoral spine serrated interiorly and granulated exteriorly, half as long as the head, or even still shorter. No porus axillaris. The anal fin does not extend quite to the vertical from the end of the adipose fin if laid backwards. Caudal fin cleft nearly to the base, its lobes being of the same length, one-sixth of the total. Coloration uniform; dorsal fin with the usual whitish cross-band.

Guatemala, Mexico.

a–c. Adult and half-grown. Lower Vera Paz. From the Collection of Messrs. Godman and Salvin.

d–e. Adult (12 inches long). Rio Motagua. From the Collection of Messrs. Godman and Salvin.

f, g–h. Half-grown. Mexico. Purchased of M. Sallé.

19. **Pimelodus micropterus.**

D. 1/6. A. 13. P. 1/8.

Head covered with soft skin above; occipital process styliform, not extending on to the basal bone of the dorsal spine. Adipose fin very long, its length being contained twice and three-fourths in the total (without caudal); its distance from the dorsal is rather less than the length of the base of the latter. The maxillary barbels extend to the end of the dorsal fin, the outer ones of the mandible to beyond the root of the pectoral.

The height of the body is contained seven times and a half in the total length (without caudal), the length of the head four times and a half. The lower jaw is rather shorter than the upper; the band of intermaxillary teeth is about six times as broad as long. Interorbital space concave, its width being equal to twice the diameter of the eye. Dorsal fin with the spine very feeble, scarcely higher than long. Pectoral fin short, rather more than half as long as the head; its spine scarcely exceeds the humeral spine in length. A minute porus axillaris. Ventral fin very short, shorter than the pectoral. Anal fin small, the length of its base being equal to that of the dorsal; its posterior rays do not extend to the end of the adipose fin if laid backwards. Caudal fin cleft nearly to the base, short, the upper lobe being less rounded than the lower, the length of which is one-seventh of the total. Blackish; dorsal fin with a whitish band across its middle.

Guatemala.

a. Seven and a half inches long. River of San Geronimo. From the Collection of Messrs. Godman and Salvin.

20. **Pimelodus nicaraguensis.**

D. 1/6. A. 13. P. 1/9.

Head covered with thin skin above. The adipose fin is very long, two-fifths of the total length (without caudal); it commences almost immediately behind the dorsal, and terminates at a very short distance from the caudal. The maxillary barbels extend to, or a little beyond, the origin of the adipose fin, the outer ones of the mandible to the root of the pectoral.

The height of the body is one-seventh of the total length (without caudal), the length of the head two-ninths; the head is depressed, rather narrow, its greatest width being two-thirds of its length; the diameter of the eye is a little less than one-half of the extent of the snout, and two-thirds of the width of the interorbital space. The least depth of the tail is contained twice and two-thirds in the length of the head. The lower jaw is a little shorter than the upper; the band of intermaxillary teeth five times as broad as long. Dorsal fin with the spine very feeble, a little higher than long. The length of the pectoral is two-thirds of that of the head, the length of the spine two-thirds of that of the fin. A minute porus mucosus in the axil. Ventral fin scarcely shorter than the pectoral. The length of the base of the anal is rather more than that of the dorsal; its posterior rays do not extend to the end of the adipose fin if laid backwards.

Blackish: lower parts whitish; dorsal fin with a very indistinct lighter longitudinal band.

Lake of Nicaragua.

a. Eight and a half inches long. Presented by Captain J. M. Dow.

21. Pimelodus petenensis.

D. 1/6. A. 11. P. 1/9.

Head covered with thin skin above. The adipose fin is rather low, especially anteriorly, but long, its length being somewhat more than one-third of the total (without caudal); it is as distant from the caudal as from the dorsal, its distance from those fins being less than the length of the base of the dorsal. The maxillary barbels extend to the origin of the adipose fin, the outer ones of the mandible nearly to the middle of the pectoral.

The height of the body is one-sixth of the total length (without caudal), the length of the head two-ninths; the head is depressed and rather broad, its greatest width being three-fourths of its length; the diameter of the eye is one-half of the extent of the snout (which is somewhat more than the width of the interorbital space), and two-fifths of the postorbital part of the head. Tail rather deep, its least depth being more than one-half of the length of the head. The lower jaw is scarcely shorter than the upper; the band of intermaxillary teeth is six times as broad as long. Dorsal fin with the spine very feeble, as high as long. The length of the pectoral equals that of the head without snout; the length of its spine is a little less than one-half of that of the head. A minute porus mucosus in the axil. Ventral fin shorter than pectoral. The length of the base of the anal is somewhat less than that of the dorsal; its posterior rays extend nearly to the end of the adipose fin if laid backwards. Greyish brown, with a darker band along the lateral line; dorsal fin with a light longitudinal band.

Lake Peten.

a. Nine inches long. From the Collection of Messrs. Salvin and Godman.

β. The adipose fin is less than one-third of the total length (without caudal).

aa. The tail above the anal fin is almost as high as the trunk.

22. Pimelodus hypselurus.

D. 1/6. A. 13. P. 1/9.

Head covered with soft skin above; occipital process rather short, triangular. Adipose fin long, one-fourth of the total length (without caudal); its distance from the dorsal is two-thirds of its own length. The maxillary barbels extend to the end of the dorsal, the outer ones of the mandible to the root of the pectoral.

The height of the body below the dorsal equals the height of the tail above the anal, and is one-sixth of the total length (without caudal), the length of the head rather more than one-fifth. The lower jaw is the shorter; the band of intermaxillary teeth is about five times as broad as long. The eyes occupy nearly the middle of the head, their diameter being two-thirds of the width of the interorbital space. Dorsal fin with the spine very feeble, higher than long. Pectoral spine half as long as the head; a minute porus axillaris. The posterior anal rays extend nearly to the vertical from the end of the adipose fin if laid backwards. The free portion of the tail is higher than long. Caudal fin forked, with both lobes rounded, their length being contained six times and a half in the total. Uniform blackish.

Mexico.

a. Five inches long. Purchased of M. Parzudaki.

23. **Pimelodus motaguensis.**

D. 1/6. A. 12. P. 1/8.

Head covered with soft skin above; occipital process short. Adipose fin long, its length being contained thrice and a fourth in the total (without caudal); its distance from the dorsal is a little less than one-half of its own length. The maxillary barbels extend to the end of the dorsal, the outer ones of the mandible to the root of the pectoral.

The height of the body below the dorsal equals the height of the tail above the anal, and is contained six times and a fourth in the total length (without caudal), the length of the head five times and a half; the greatest width of the head is three-fourths of its length. The lower jaw is the shorter; the band of intermaxillary teeth is about five times as broad as long. Eye a little nearer to the extremity of the snout than to the gill-opening, its diameter being two-thirds of the width of the interorbital space. Dorsal fin with the spine very feeble, higher than long. Pectoral spine striated, strongly serrated along its inner margin, and entire along the outer one; a minute porus axillaris. The posterior anal rays do not extend to the vertical from the end of the adipose fin if laid backwards. The free portion of the tail is as high as long. Caudal fin forked, with the lower lobe rounded and with the upper slightly pointed; the upper is the longer, one-sixth of the total length. Upper and lateral parts brownish, the lower whitish; dorsal with a white band.

Rio Motagua.

a. Nine inches long. From Mr. Salvin's Collection.

24. **Pimelodus laticauda.**

Pimelodus laticaudus (*Heck.*), *Kner*, *Sitzungsber. Wien. Acad.* xxvi. p. 420.

D. 1/6. A. 13. P. 1/8.

Head covered with soft skin above; occipital process short. Adipose fin long, two-sevenths of the total length (without caudal)

The maxillary barbels extend to the ventral, the outer ones of the mandible to the root of the pectoral. The depth of the tail is but little less than that of the body. The length of the head is contained five times and a half in the total (with the caudal). The lower jaw is the shorter. The eyes are situated somewhat before the middle of the head, and their diameter is two-fifths of the width of the interorbital space. Pectoral spine only half as long as the rays. Caudal fin subtruncated. (*Kner.*)

Mexico.

bb. Tail gradually becoming lower from its commencement.

25. Pimelodus pati.

Pimelodus pati, *Valenc., in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 1. figs. 7–9; *Cuv. & Val.* xv. p. 176; *Kner, Sitzgsber. Acad. Wiss. Wien,* xxvi. p. 416.

B. 9. D. 1/6. A. 12. P. 1/12.

Snout produced and depressed. Head covered with thin skin above; occipital process five or six times as long as broad, not reaching the basal bone of the dorsal spine. Adipose fin very low, its length being more than one-fourth of the total (with the caudal). The maxillary barbels extend on to the anal fin, the outer ones of the mandible to the tip of the pectoral. The diameter of the eye is one-fourth of the width of the interorbital space. Dorsal spine feeble, about as long as that of the pectoral fin, and as high as the body. Caudal forked. Yellowish, with numerous small, rounded, blackish spots. (*Val.*)

Rio de la Plata. Rio Branco.

26. Pimelodus jenynsii.

Pimelodus gracilis, *Jenyns, Voy. Beagle, Fishes,* p. 110 (not *Valenc.*).

D. 1/6. A. 14–15. P. 1/9.

Helmet smooth and not very conspicuous; occipital process lanceolate, three times as long as broad, not extending on to the basal bone of the dorsal spine. The space between the dorsal and the adipose fin a little exceeds the length of the former, the adipose being twice the length of that fin. The maxillary barbels extend to the origin of the adipose fin, the outer ones of the mandible beyond the root of the pectoral.

The height of the body is contained seven times and a half in the total length (with the caudal), the length of the head six times. The diameter of the eye is contained four times and a half in the length of the head, and once and a quarter in the width of the interorbital space. The pectorals are rather shorter than the head, and their spine is strongly serrated and very little shorter than the soft rays. Dorsal fin one-third higher than long, with the spine slender. Caudal forked, with the upper lobe a little longer than the lower. A dark band along the lateral line. (*Jen.*)

Rio de Janeiro.

27. Pimelodus pentlandii.

Pimelodus pentlandii, *Cuv. & Val.* xv. p. 183. pl. 435 (adipose fin too long).

D. 1/6. A. 12. P. 1/9. V. 6.

Head covered with thin skin above; occipital process very short. Adipose fin long, its length being contained four times and two-thirds in the total (without caudal); it is not much longer than its distance from the dorsal. Maxillary barbels extending on to the root of the ventral, the outer ones of the mandible to the middle of the pectoral.

The height of the body is contained five times and two-thirds in the total length (without caudal), the length of the head four times. The lower jaw is scarcely shorter than the upper; the band of intermaxillary teeth is about seven times as broad as long. The diameter of the eye is two-fifths of the width of the interorbital space. Dorsal fin with the spine very feeble, somewhat higher than long. Pectoral spine slightly serrated along both edges, two-fifths of the length of the head. Caudal fin cleft to the base. Coloration uniform; dorsal blackish, with a more or less distinct whitish band across the basal portion.

High Peru.

a–b. Two of the typical specimens, 11 inches long. From Mr. Pentland's Collection.

A skeleton in Hyrtl's Collection, named *P. pentlandii*, has 16 abdominal and 24 caudal vertebræ (Denkschr. Acad. Wiss. Wien, 1859, xvi. p. 16).

28. Pimelodus humilis.

D. 1/6. A. 12. P. 1/9. V. 6.

Head covered with thin skin above; occipital process very short. Adipose fin long, its length being contained four times in the total (without caudal); its distance from the dorsal is two-thirds of its length. Maxillary barbels extending on to the root of the ventral, the outer ones of the mandible to that of the pectoral.

The height of the body is contained six times and a third in the total length (without caudal), the length of the head four times and two-thirds. Upper jaw a little longer than the lower; the band of intermaxillary teeth is eight times as broad as long; the diameter of the eye is one-half of the width of the interorbital space, and one-sixth of the length of the head; the eye occupies the third sixth of the latter. Dorsal fin with the spine very feeble, rather higher than long. Pectoral spine slightly serrated along both edges, two-fifths of the length of the head. Caudal fin cleft to the base, with the upper lobe more pointed than the lower. Coloration uniform; dorsal blackish, with a whitish band across its basal portion.

Venezuela.

a, *b–c*. Seven inches long.

29. Pimelodus cinerascens.

Pimelodus cinerascens, *Günth. Proc. Zool. Soc.* 1860, p. 237. pl. 10. fig. A.

B. 7. D. 1/6. A. 13. P. 1/9.

Head covered with soft skin above; occipital process triangular, short. Adipose fin long, two-sevenths of the total length (without caudal); its distance from the dorsal is nearly one-fourth of its length. The maxillary barbels extend nearly to the origin of the adipose fin, the outer ones of the mandible beyond the root of the pectoral.

The height of the body is rather less than one-fifth of the total length (without caudal), the length of the head one-fourth. Jaws subequal in length; the band of intermaxillary teeth is five or six times as broad as long. The diameter of the eye is two-fifths of the width of the interorbital space. Dorsal fin with the spine very feeble, as high as long. Pectoral spine less than half as long as the head. A minute porus axillaris. The anal fin extends to the vertical from the adipose fin if laid backwards.

Guayaquil and Esmeraldas.

a, b. Types of the species. Purchased of Mr. Fraser.
c. Adult. South America. Presented by Sir R. Schomburgk.

30. Pimelodus foina.

Pimelodus foina, *Müll. & Trosch. Hor. Ichth.* iii. p. 5.

B. 6. D. 1/6. A. 11. P. 1/8.

Head covered with soft skin; occipital process very short. The adipose fin commences behind the end of the ventrals, and is twice as long as the dorsal. The maxillary barbels extend to the end of the pectorals, the outer ones of the mandible to their root.

The length of the head is less than one-fifth of the total (with the caudal). The upper jaw is rather the longer. The eyes occupy the middle of the head; their diameter equals the space between them, but is twice the width of the osseous part of the interorbital space. Porus axillaris minute. Upper lobe of the caudal fin longer than the lower; pectoral spine strongly serrated. (*M. & T.*)

Guiana.

31. Pimelodus salvini.

D. 1/6. A. 11. P. 1/8.

Head covered with soft skin above; occipital process short, triangular. Adipose fin long, one-fourth of the total length (without caudal); its distance from the dorsal is three-fourths of its length. The maxillary barbels extend not quite to the extremity of the pectoral, the outer ones of the mandible not quite to the root of the pectoral.

The height of the body is one-sixth of the total length (without caudal), the length of the head one-fifth. Jaws nearly equal in length; the band of intermaxillary teeth is about six times as broad as long. The eyes are situated somewhat before the middle of the head; their diameter is one-fifth of the length of the head, and not quite one-half of the width of the interorbital space. Dorsal fin rounded, as high as long, with the spine very feeble. Pectoral spine very short, not quite one-third of the length of the head. A small porus axillaris. The length of the pectoral is one-half of the distance of its root from that of the ventral. The anal fin does not extend to the vertical from the end of the adipose fin if laid backwards. Caudal fin cleft nearly to the base, its lobes being almost of the same length, contained six times and a half in the total length. Coloration uniform dark brown.

Guatemala.

a. Six inches long. Rio de San Geronimo. From Mr. O. Salvin's Collection.

32. **Pimelodus notatus.**

Schomburgk, Fishes of Guiana, i. p. 181. pl. 7.

B. 9. D. 7. A. 17. P. 1/9. Vert. 44.

Head covered with skin above; dorsal and pectoral spines feeble, the former sometimes produced into a long filament; adipose fin but little longer than dorsal, widely separate from it. The maxillary barbels extend to the ventral, those of the mandibles beyond the extremity of the pectoral. Back and dorsal fin with numerous small black spots. (*Schomb.*)

Amazons, Rio Branco.

b. Dorsal fin with seven or eight soft rays.

33. **Pimelodus polycaulus.**

D 1/7. A. 15. P. 1/8. V. 6.

Head covered with soft skin above; occipital process short, triangular. Adipose fin long, its length being contained thrice and a third in the total (without caudal); its distance from the dorsal is somewhat more than one-half of its own length. The maxillary barbels extend to the extremity of the pectoral, the outer ones of the mandible to its root.

The height of the body is one-sixth of the total length (without caudal), the length of the head one-fifth. The lower jaw is rather shorter than the upper; the band of intermaxillary teeth is about six times as broad as long. Eyes situated before the middle of the length of the head, their diameter being one-half of the width of the interorbital space. Dorsal fin rounded, higher than long; its spine, prolonged into a flexible portion, is very short and feeble. Pectoral fin two-thirds of the length of the head; its spine is short, somewhat longer than the humeral spine. A minute porus axillaris. Ventral fin rather shorter than pectoral; the posterior anal rays do not extend to the vertical from the end of the adipose fin if laid backwards. Caudal fin two-lobed, the lobes being equal in length, the upper pointed, the lower rounded, contained six times and a half in the total length. Uniform blackish.

Guatemala.

a. Five inches long. Rio San Geronimo. From the Collection of Messrs. Godman and Salvin.

34. Pimelodus exsudans.

Pimelodus exsudans, *Jenyns, Zool. Beagle, Fish.* p. 111.

D. 1/7. A. 13–14. P. 1/8.

Head covered with thin skin above; the occipital process does not extend on to the basal bone of the dorsal spine and is rather short. The length of the dorsal fin equals its distance from the adipose fin, and is two-thirds of the length of the latter. The maxillary barbels extend to the end of the ventrals, and the outer ones of the mandible to the root of the pectoral.

The height of the body is rather less than the length of the head, and one-fifth of the total (with the caudal). Head with series of large pores. Jaws equal in length. The eyes are somewhat before the middle of the head; their diameter is one-fifth of the length of the head, and one-half of the width of the interorbital space. Pectoral spine serrated, long, but little shorter than the rays. Dorsal fin higher than long; caudal deeply forked, with the lobes equal in length. (*Jen.*)

? Rio de Janeiro.

35. Pimelodus sapo.

Pimelodus sapo, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 2. figs. 6–8; *Cuv. & Val.* xv. p. 179; *Kner, Sitzgsber. Acad. Wiss. Wien*, xxvi. p. 417.

D. 1/7. A. 11.

Head covered with thin skin; occipital process not reaching the basal bone of the dorsal spine. Adipose fin and barbels very long. The lower jaw is rather the longer. The diameter of the eye is two-sevenths of the width of the interorbital space. Caudal fin deeply forked.

Rio de la Plata.

36. Pimelodus hilarii.

Pimelodus hilarii, *Cuv. & Val.* xv. p. 180.

D. 1/8. A. 12.

Head covered with skin; occipital process not reaching the basal bone of the dorsal spine. Adipose fin long. The upper jaw is but little longer than the lower; the maxillary barbels extend somewhat beyond the dorsal fin. (*Val.*)

Brazil.

2. Non-American species.

37. Pimelodus deppii.

Pimelodus deppii, *Müll. & Trosch. Hor. Ichth.* iii. p. 3.

B. 7. D. 1/5–6. A. 14. P. 1/9.

Head covered with skin above; occipital process thrice as long as broad, not extending on to the base of the basal bone of the dorsal spine. The length of the head is one-sixth of the total length (with the caudal). The distance between the dorsal and adipose fins equals the length of the former; the posterior anal rays extend to the vertical from the end of the adipose fin if laid backwards. No porus axillaris; pectoral spine serrated nearly in its whole length. (*M. & T.*)

Sandwich Islands.

38. Pimelodus javus.

Pimelodus javus, *Cuv. & Val.* xv. p. 187.

D. 7. A. 13.

Head covered with skin above; occipital process not extending on to the basal bone of the dorsal spine. Adipose fin very long, commencing immediately behind the dorsal. The length of the maxillary barbel is three-fifths of that of the body; the outer maxillary barbel extends to the extremity of the pectoral. None of the rays spinous; caudal forked, with the upper lobe longest. (*Val.*)

Java.

D. The occipital process does not extend on to the basal bone of the dorsal spine; body short, stout.

39. Pimelodus bufonius.

Pimelodus bufonius, *Cuv. & Val.* xv. p. 154.

D. 1/6. A. 9. P. 1/6.

The length of the head is one-fourth of the total. The band of teeth in the upper jaw is broad, terminating laterally in a tapering portion running backwards. The basal bone of the dorsal spine is narrow, and longer than the occipital process. The maxillary barbel extends to the præopercular margin. Pectoral spine very stout, serrated along both edges. Caudal rounded, somewhat emarginate behind. Brown, marbled with darker.

Cayenne; Brazil.

a. Skin: 12 inches long. River Cipo, a tributary of the Rio das Vilhas. Minas Geraës, Brazil. From the Collection of Mr. Ch. Cumberland.

40. Pimelodus raninus.

Pimelodus raninus, *Cuv. & Val.* xv. p. 157. pl. 434.

D. 1/6. A. 10–11. P. 1/6.

Head as broad as long, its length being contained thrice and two-thirds in the total. The band of teeth in the upper jaw is of moderate breadth, without prolonged lateral portion. The basal bone of the dorsal spine is narrow, about as long as the occipital process. The maxillary barbel extends to the end of the head. Pectoral spine very stout, depressed, serrated along both edges. Caudal rounded. Brown, marbled with darker; a series of white spots along the base of the dorsal and anal fins; dorsal, adipose, and anal fins blackish brown, with a white margin; caudal with brown dots, and with a blackish band edged with white posteriorly, across the margin; the pectorals and ventrals blackish brown.

Brazil; Guiana.

a. Fine specimen, 4 inches long. From the Collection of the Zoological Society.

b–c. Fine specimens. Essequibo. From Mr. Ehrhardt's Collection.

41. **Pimelodus mangurus.**

Pimelodus mangurus, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 1. figs. 4–6; *Cuv. & Val.* xv. p. 156.

B. 9. D. 1/7. A. 9 (?). P. $\frac{1}{7\text{–}8}$.

Head broader than long, its length being one-fifth of the total; lower jaw rather the longer. The maxillary barbels extend scarcely to the præoperculum. Light brown, dorsal and caudal fins darker. (*Val.*)

La Plata River.

E. The occipital process is short; body moderately elongate; adipose fin not longer than dorsal.

42. **Pimelodus platychir.**

D. 7. A. 8. P. 10. V. 6.

Head and anterior part of the body much depressed; head rather longer than broad, its length being contained four times and a third in the total (without caudal), the height of the body one-seventh. The posterior part of the trunk is subcylindrical, the tail compressed; the least depth of the latter is less than that of the body. Head entirely covered with soft skin; eyes very small, partly directed upwards, placed a little nearer to the end of the operculum than to that of the snout. The width of the interorbital space is less than the extent of the snout, which is rounded. Nostrils on the upper side of the snout, the anterior rather remote from the posterior. Cleft of the mouth of moderate width, each jaw with a band of villiform teeth; the upper is somewhat longer than the lower. The maxillary barbels extend to the end of the head; the outer mandibulary barbels are at the angle of the mouth, extending to the base of the pectoral; the inner mandibulary barbels are shorter, and placed immediately behind the margin of the lower lip. Gill-openings wide, the gill-membranes not attached to the isthmus, and only slightly united in front. The length of the base of the dorsal fin is scarcely more than one-half of its distance from the occiput, and one-third of that from the adipose fin; it is as high as the body, and its first ray is scarcely spinous. Adipose fin low, not longer than the dorsal, opposite to the anal; caudal emarginate, with the lobes pointed. Pectorals and ventrals horizontal, with the outer ray dilated and transversely striated, not spinous. The ventrals are not much shorter than the pectorals, and inserted behind the dorsal. The vent is midway between opercle and root of the caudal. Upper parts blackish.

West Africa.

a–d. From 2–2½ inches long. Sierra Leone. Presented by Dr. A. Günther.

54. PIRINAMPUS.

Pinirampus, *Bleek. Nederl. Tyaschr. Dierk.* 1863, p. 100.

Adipose fin long; dorsal short, with a pungent spine and with six rays; anal fin short. Barbels six, long and band-like. Teeth villiform in the jaws; palate edentulous. Ventral fin with six rays; caudal forked.

Brazil.

1. Pirinampus typus.

Pimelodus pirinampus, *Agass. in Spix, Pisc. Bras.* p. 20. tab. 8; *Kner, Sitzgsber. Acad. Wiss. Wien,* xxvii. p. 416.
Pinirampus typus, *Bleek. l. c.*

D. 1/6. A. 12. P. 1/15.

Head granulated between the eyes, its hinder part and the neck being covered with skin; the occipital process extends on to a rather large dorsal shield. Spines of the fins rather slender, that of the dorsal fin prolonged into a filament. The maxillary barbels extend on to the anal fin, and the outer ones of the mandible are not much shorter.

Brazil.

A South American species, indicated by Humboldt under the name of *Pimelodus barbancho* (Observ. Zool. ii. p. 172), appears to have some similarity with the above species.

55. CONORHYNCHUS.

Conostome, sp., *Duméril, Ichthyol. Anal.* p. 484.
Conorhynchus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 102.

Adipose fin very short; dorsal short, with a pungent spine and with six (seven) rays; anal fin of moderate length. Snout produced, pointed, with narrow mouth; barbels six. Teeth in the upper jaw minute, the lower and the palate edentulous. Eyes of moderate size. Ventral with six rays.

Brazil.

1. Conorhynchus conirostris.

Pimelodus conirostris, *Cuv. & Val.* xv. p. 204. pl. 436.

D. 1/6. A. 20.

Head granulated above; occipital process more than twice as long as broad, joining the triangular basal bone of the dorsal spine; barbels thin, much shorter than the head. Dorsal spine strong, longer than that of the pectoral fin, three-quarters of the length of the head. Caudal emarginate.

Brazil.

a. Skin, 29 inches long. River Cipo, a tributary of the Rio das Vilhas, Minas Geraës. From the Collection of Mr. Ch. Cumberland.

56. NOTOGLANIS*

Adipose fin long; dorsal fin with a pungent spine and with ten soft rays; anal short. Barbels six. Teeth in the jaws villiform; palate edentulous. The upper jaw is the longer. The ventral fins six-rayed, inserted below the end of the dorsal fin; caudal forked.

Brazil.

1. Notoglanis multiradiatus.

Pimelodus multiradiatus, *Kner, in Sitzgsber. Wien. Acad.* xxvii. p. 414.

D. 1/10. A. 10.

Head granulated above; the eyes occupy the middle of the length of the head, and their diameter is two-fifths of the width of the interorbital space. The maxillary barbels extend to the anal fin, the outer ones of the mandible to below the dorsal fin. Spines of the fins well developed; adipose fin one-third longer than dorsal. (*Kner*.)

Rio Madeira, Rio Facutu.

57. CALLOPHYSUS.

Callophysus, *Müll. & Trosch. Hor. Ichth.* iii. p. 1.

Callophysus et Pseudocallophysus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 101.

Pimeletropis, *Gill, Proc. Acad. Nat. Sc. Philad.* 1859, p. 196.

Adipose fin very long; dorsal fin short, with a feeble spine and with six rays; anal fin rather short. Each jaw with a series of small flattish teeth, behind which sometimes another series of smaller ones; palate edentulous. Barbels six. Ventral fins with six or seven rays.

South America.

1. Callophysus lateralis.

Pimeletropis lateralis, *Gill, l. c.*

B. 8. D. 1/6. A. 13. P. 1/12.

Occipital process elongate, four times as long as broad, not extending on to the basal bone of the dorsal spine. No other teeth behind the front series in either of the jaws. The maxillary barbels extend to. or beyond, the base of the caudal. Some roundish dusky spots along the side. (*Gill.*)

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* 1. Pimelodus arekaima, *Schomburgk, Fish. Guiana*, i. p. 178. pl. 5.—Guiana.

Amazons River.

2. Callophysus macropterus.

Pimelodus macropterus, *Lichtenst., in Wiedem. Zool. Mag.* i. part 3. 1819, p. 59.

Callophysus macropterus, *Müll. & Trosch. Hor. Ichth.* iii. p. 1.

B. 7. D. 1/6. A. 12. P. 1/12. V. 6.

The occipital process does not extend on to the small basal bone of the dorsal spine. A second series of small teeth behind the front series in the upper jaw; no second series in the lower. The maxillary barbels extend to the base of the caudal, the outer ones of the mandible not quite to the end of the ventrals. (*M. & T.*)

Brazil; Guiana.

3. Callophysus ctenodus.

Pimelodus ctenodus, *Agass. in Spix, Pisc. Bras.* p. 21. pl. 8 *a.*

D. 1/6. A. 10. P. 1/14. V. 7.

The occipital process does not extend on to the small basal bone of the dorsal spine. A second series of small teeth behind the front series in the lower jaw. The maxillary barbels extend beyond the anal, the outer ones of the mandible beyond the pectoral. (*Agass.*)

Brazil.

58. AUCHENASPIS.

Auchenaspis, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 101.

Adipose fin rather long; dorsal short, with a pungent spine and with seven rays; anal short. Snout produced, pointed, with narrow mouth; barbels six. The teeth of each jaw form a pair of small elliptic patches which are longer than broad; palate edentulous. Nostrils distant from each other; eyes of moderate size. Gill-membrane scarcely notched at the throat. Ventral with six rays.

Tropical Africa.

1. Auchenaspis biscutatus.

Pimelodus biscutatus, *Geoffr. Descr. Egypt. Zool. Poiss.* pl. 14. figs. 1 & 2; *Cuv. & Val.* xv. p. 197.

—— occidentalis, *Cuv. & Val.* xv. p. 203.

B. 9. D. 1/7. A. 11–12. P. 1/9.

Head coarsely granulated above; occipital process very broad, with the lateral margins convex, joining the very large saddle-shaped dorsal plate. Snout produced, pointed, with broad lips and with a narrow mouth. Barbels cylindrical, shorter than the head, the outer ones of the mandible being shorter than those of the maxillaries. Dorsal and pectoral spines strong, nearly equal in length, rather more than half as long as the head. The length of the adipose fin is two-sevenths or one-fourth of the total (without caudal); it is very high in adult examples. Anal fin much higher than long. Caudal subtruncated. Brownish; fins with rounded dark spots.

Nile; Senegal.

a, b–e. Fine specimens. Chartoum. From Consul Petherick's Collection.
f. Adult. West Africa. Purchased of Mr. Dalton.
g. Twenty-six inches long: stuffed. Senegal. Purchased of M. Parzudaki.

Eighth Group. ARIINA.

Proteropterous Siluroids with the anterior and posterior nostrils placed close together, and without nasal barbel, the posterior nostril being provided with a valve.

59. ARIUS*.

Bagrus, sp., et Arius, *Cuv. & Val.*
Bagrus, sp., Sciades, sp., Ariodes et Arius, *Müll. & Trosch.*
Hexanematichthys, Guiritinga, Sciades, Arius, Hemiarius, Cephalocassis, Netuma, Ariodes, et Pseudarius, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 90.

Adipose fin of moderate length or short; a short dorsal fin with a pungent spine and with seven (six†) soft rays; anal fin rather short. Head osseous above; barbels six, four at the mandible. Teeth on the palate fixed; the upper jaw is the longer. Eyes with a free orbital margin. Caudal fin forked; ventral with six rays, attached behind the vertical from the dorsal.

Tropical regions.

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* *a. Teeth on the palate villiform or cardiform.*

1. Bagrus trachipomus, *C. & V.* xiv. p. 443.—Bengal.
2. Chinta-jellah, *Russell*, pl. 167.—Bagrus chinta, *C. & V.* xiv. p. 445.—Coromandel.
3. Bagrus pemecus, *C. & V.* xiv. p. 456.—Cayenne.
4. —— couma, *C. & V.* xiv. p. 459.—Cayenne.
5. Arius subrostratus, *C. & V.* xv. p. 62.—Malabar.
6. —— rostratus, *C. & V.* xv. p. 63.—Alipey.
7. —— belangerii, *C. & V.* xv. p. 71.—Bombay.
8. Leptarius dowii, *Gill, Proc. Acad. Nat. Sc. Philad.* 1863, p. 170.—West coast of Central America.
9. Arius nigricans, *Valenc. in d'Orb. Voy. Amér. Mérid. Atl. Poiss.* pl. 3. fig. 3; *C. & V.* xv. p. 83.—South America.
10. Silurus quadrimaculatus, *Bl.* tab. 368. fig. 2; *Bl. Schn.* p. 383.—Pimelodus quadrimaculatus, *C. & V.* xv. p. 185.—America.

β. Teeth on the palate granular.

1. Pimelodus jatius, *Ham. Buch.* pp. 171, 376.—Arius jatius, *Blyth, Calc. Journ. As. Soc. Beng.* xxix. p. 151.—Ganges.
2. Arius molliceps, *C. & V.* xv. p. 108.—*Hab.* —— ?
3. —— puncticulatus, *C. & V.* xv. p. 108.—Buenos Ayres.

† All the species examined by myself have seven dorsal rays; Valenciennes however, mentions six only in several South American species.

I have observed in several species that the bands of teeth on the palate become relatively larger with age, so that the vomerine teeth, which in young specimens form a slightly interrupted band, are confluent into one band in others which are more advanced in growth; in the same way the palatine teeth may be entirely united with those on the vomer, or separated by a narrow interspace. In species which have rudimentary vomerine teeth, these are sometimes entirely lost with age.

Synopsis of the Species.

I. The vomerine teeth are present, and form one continuous or but slightly interrupted band, which is more or less confluent with the palatine teeth.
  - A. Teeth on the palate villiform.
    - *a.* East Indian species: *Hexanematichthys*, Blkr., p. 139.
    - *b.* South American species: *Guiritinga*, Blkr. + *Sciades*, Blkr., p. 143.
    - *c.* African species, p. 151.
  - B. Teeth on the palate granular, p. 152.

II. Teeth on the palate in two generally widely separate patches; sometimes the vomerine teeth are present, but widely separate into two small groups which may be continuous with the palatine teeth: *Arius*, Valenc.
  - A. Teeth on the palate villiform.
    - *a.* A large interneural shield on the nape: *Arius*, sp., Blkr., p. 153.
    - *b.* No large interneural shield on the nape.
      - α. African species, p. 154.
      - β. South American species, p. 155.
      - γ. Pacific species, p. 157.
      - δ. East Indian species: *Hemiarius*, *Arius*, *Cephalocassis* et *Netuma*, Blkr., p. 158.
  - B. Teeth on the palate granular or obtusely conical.
    - *a.* Teeth on the palate in four groups, those of the vomer being present: *Ariodes*, sp., M. & T., p. 163.
    - *b.* Teeth on the palate in two groups: *Pseudarius*, Blkr.
      - α. East Indian species, p. 166.
      - β. American species, p. 171.

Appendix: *Bagrus venaticus* et *B. vertagus*, p. 174.

I. The vomerine teeth are present, and form one continuous or but slightly interrupted band, which is more or less confluent with the palatine teeth.

A. Teeth on the palate villiform.

a. East Indian species.

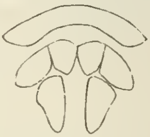
1. **Arius thalassinus.**

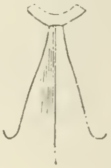
Deddi jella, *Russ. Fish. Corom.* pl. 169.
Bagrus thalassinus, *Rüpp. N. W. Fische*, p. 75. taf. 20. fig. 2.
—— bilineatus, *Cuv. & Val.* xiv. p. 434.

Bagrus netuma, *Cuv. & Val.* xiv. p. 438. pl. 417.
? Bagrus lævigatus, *Cuv. & Val.* xiv. p. 439.
Arius nasutus, *Cuv. & Val.* xv. p. 60; *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 31.
Bagrus rhodonotus, *Bleek. l. c.* p. 29.
—— carchariorhynchus, *Bleek. l. c.* p. 30.
Netuma nasuta, *Bleek. Prodr. Silur.* p. 95, and *Atl. Ichth. Silur.* tab. 61.
—— thalassina, *Bleek. Atl. Ichth. Silur.* p. 28.

D. 1/7. A. 16–17. P. 1/11. Vert. 18/27.

The height of the body is contained from four times and three-quarters to five times and two-fifths in the total length (without caudal), the length of the head four times and a quarter or thrice and a half. Head much broader than high; snout obtuse in young specimens; the adult fish with the upper jaw pointed and projecting much beyond the lower. The teeth on the palate are villiform, and form a pair of more or less separate subtriangular patches, each of which is composed of three portions. The maxillary barbels extend to the opercles or to the pectoral. Crown of the head granulated; occipital process triangular, rather longer than broad, elevated in its middle into a longitudinal ridge; the basal bone of the dorsal spine is small, crescent-shaped. Dorsal spine of moderate strength, granulated in front, slightly serrated behind; its length equals that of the head without snout. The soft dorsal fin is as high as the body. Adipose fin very short. Pectoral spine stronger and but little shorter than that of the dorsal fin.





Red Sea; East Indies.

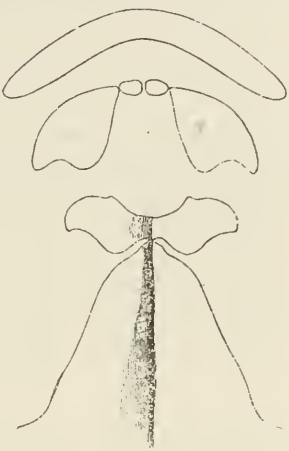
a. Thirty-two inches long: stuffed. East Indies. From the Collection of the East India Company.
b. Half-grown. Singapore. From the Haslar Collection.
c. Young. Red Sea. Presented by Dr. E. Rüppell.
d, e. Half-grown. Java.
f. Half-grown. From Dr. P. v. Bleeker's Collection
g. Adult (20 inches long): stuffed

2. **Arius gagorides.**

Bagrus gagorides, *Cuv. & Val.* xiv. p. 441; *Blyth, Journ. As. Soc. Beng.* xxvii. p. 285.
—— trachipomus, *Cuv. & Val.* xiv. p. 443.

D. 1/7. A. 17. P. 1/12.

The height of the body is rather less than one-fourth of the total length (without caudal), the length of the head two-sevenths; head much broader than high, its greatest width being equal to the distance of the hinder nostril from the end of the opercle. The teeth on the palate are in two pairs of confluent patches, those of the vomer being very small, whilst those on the palatine bones are large, broad, and emarginate posteriorly. Six barbels, shorter than the head. Crown of the head granulated, the granules being arranged in radiating series; occipital plate triangular, elevated into an obtuse ridge along its middle, rather broader than long; the basal bone of the dorsal spine is of moderate width, narrowest in the middle, each half slightly bent into an S-shaped form. Dorsal spine strong, as long as the head without snout, granulated in front and obtusely serrated behind, as high as the soft dorsal or as the body underneath. Adipose fin somewhat shorter than the dorsal. Pectoral spine as long as that of the dorsal fin, granulated exteriorly and serrated interiorly. Ventral fins much shorter than the pectorals, not extending on to the anal. Caudal deeply forked.



Calcutta.

a. Twenty-six inches long: stuffed. Calcutta. From the Collection of the East India Company.

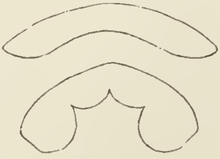
b. Twenty-four inches long: stuffed.

3. Arius sagor.

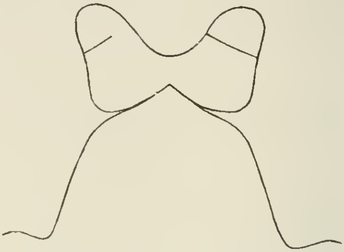
Pimelodus sagor, *Ham. Buch.* p. 169.
Bagrus sondaicus, *Cuv. & Val.* xiv. p. 444; *Cant. Mal. Fish.* p. 255.
—— javensis, *Cuv. & Val.* xiv. p. 445.
—— sagor, *Cuv. & Val.* xiv. p. 446.
Hexanematichthys sundaicus, *Bleek. Prodr. Silur.* p. 127, and *Atl. Ichth. Silur.* p. 26. tab. 62.

D. 1/7. A. 18. P. 1/11.

The height of the body is contained nearly six times in the total length (without caudal), the length of the head three times and three-fourths. Head much depressed, much broader than high, its greatest width being equal to its length without snout. The teeth on the palate are in two pairs of patches, which are confluent, or separated by very narrow interspaces; the vomerine pair is only half as large as that of the palatine bones. Six barbels; those of the maxillaries extend to the end, the outer ones of the mandible to the middle of the pectoral fin. Nearly the whole of the upper surface of the head and of the neck is granulated, the granules being arranged in radiating or concentric lines. Occipital plate large, as broad as long, subsemicircular; the basal bone of the dorsal spine is well developed, butterfly-shaped. Dorsal spine strong, granulated along its anterior surface, scarcely serrated behind, its length being contained once and two-thirds in that of the head;



base of the adipose fin nearly as long as that of the dorsal. Pectoral spine obtusely serrated along both edges, shorter than the head. Ventral fins much shorter than the pectorals, extending to, or nearly to, the origin of the anal fin. There are some granulations along the foremost part of the lateral line.



Bengal, Pinang, East Indian Archipelago.

a. Adult (17 inches long): stuffed. Bay of Bengal. From Dr. Cantor's Collection.
b. Young: skin. Pinang. From Dr. Cantor's Collection.
c. Adult. Purchased of Mr. Frank.

4. **Arius doroides.**

Bagrus doroides, *Cuv. & Val.* xiv. p. 447. pl. 418.

D. 1/7. A. 17. P. 1/10.

The upper surface of the head granulated; occipital process twice as broad as long, broadly united with the basal bone of the dorsal spine, which is very large, butterfly-shaped. Opercles and front part of the dorsal and pectoral spines granulated. The lateral portions of the band of teeth on the palate are ovate, and not triangular. Barbels six; those of the maxillaries extending to the end of the opercle. Anterior portion of the lateral line covered with a series of granulated small plates. Ventrals shorter than pectorals. (*Val.*)

Bengal; Pondicherry.

5. **Arius leptaspis.**

Hexanematichthys leptaspis, *Bleek. Atl. Ichth. Silur.* p. 27. tab. 65.

D. 1/7. A. 19. P. 1/10.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head thrice and two-thirds; head coarsely granulated above, broader than high, its greatest width being contained once and a sixth in its length. Occipital process subtriangular, scarcely longer than broad, with the lateral margins straight, extending on to the basal bone of the dorsal fin, which is small, narrow, crescent-shaped. Snout obtusely rounded, depressed, nearly twice as long as the eye, with the upper jaw a little longer than the lower. The teeth on the palate form a slightly curved band, those of the vomer being disposed in two patches near to each other and to those of the palatines; the latter are small, not much larger than those of the vomer. The maxillary barbels reach to the end of the pectoral fin. Porus axillaris small. Dorsal fin as high as the body, with a strong, serrated spine. Adipose fin much shorter than dorsal. Pectorals shorter than the head, their spine being two-thirds of the length of the head; ventrals much shorter than pectorals. (*Bl.*)

South-western coast of New Guinea.

6. **Arius arioides.**

Bagrus arioides, *Cuv. & Val.* xiv. p. 440.

B. 6. D. 1/7. A. 21. P. 1/10.

The length of the head is one-fifth of the total (with the caudal); head one-fourth longer than broad. The maxillary barbel extends to the hinder third of the pectoral, and the outer of the mandible is nearly as long as the head. The teeth on the palate form two broad triangles, joining each other anteriorly. Occipital process nearly as broad as long; the basal bone of the dorsal spine narrow, crescent-shaped. Dorsal and pectoral spines entirely granulated; the former is slightly serrated behind, and one-fourth higher than the body, and terminates in a longish soft filament. (*Val.*)

Bengal.

Blyth identifies this species with *Pimelodus sona*, Ham. Buch. p. 172 (Journ. As. Soc. Beng. xxix. p. 151), to which opinion we do not accede, as Buchanan, in his descriptions of Siluroids, always gives the highest number of the anal rays, and says that *P. sona* has only eighteen.

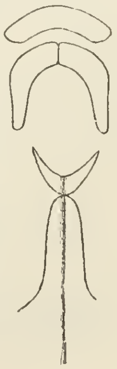
b. South American species.

7. **Arius commersonii.**

Pimelodus barbus, *Lacép.* v. pp. 94, 106.
—— commersonii, *Lacép.* v. pp. 95, 108. pl. 3. fig. 1.
Bagrus barbatus, *Quoy & Gaim. Voy. Uran. Zool.* p. 230. pl. 49. figs. 1 & 2.
—— commersonii, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 3. fig. 1; *Cuv. & Val.* xiv. p. 449; *Kner, Sitzungsber. Acad. Wiss. Wien,* xxvi. p. 386.
Pimelodus versicolor, *Casteln. Anim. Amér. Sud, Poiss.* p. 35. pl. 16. fig. 3.

D. 1/7. A. 19. P. 1/11.

The height of the body is one-fifth of the total length (without caudal), the length of the head one-fourth; the greatest width of the head equals its length without snout. The teeth on the palate are in a broad, long, horseshoe-like band, scarcely interrupted in the middle. Six barbels; the maxillary barbels are as long as the head, the outer mandibulary barbels extend to the base of the pectoral. Crown of the head striated; occipital process elongate, elevated into a ridge along the middle, much longer than broad; the basal bone of the dorsal spine is narrow, angularly bent. Dorsal spine of moderate strength, as long as the head without snout, granulated in front and scarcely serrated behind; the soft dorsal fin pointed, as high as the body; adipose fin as long as the dorsal. Pectoral spine serrated along both edges,



stronger and longer than that of the dorsal fin. Ventral fins much shorter than the pectorals, not extending on to the anal.

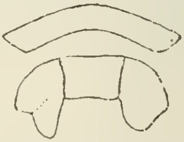
Brazil.

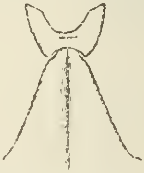
a, b. Bahia. Purchased of M. Parzudaki.

8. **Arius herzbergii.**

Silurus herzbergii, *Bl.* viii. p. 33. tab. 367; *Bl. Schn.* p. 382.
Bagrus herzbergii, *Cuv. & Val.* xiv. p. 453.
—— cœlestinus, *Müll. & Trosch. Hor. Ichth.* iii. p. 7.
—— mesops, *Kner, Sitzungsber. Wien. Acad.* p. 384. taf. 1. fig. 2 (not *C. & V.*).

B. 6. D. 1/7. A. 18–20. P. 1/10.





The height of the body is one-sixth of the total length (without caudal), the length of the head two-sevenths. Vomerine and palatine teeth confluent, the vomerine forming a subquadrangular patch, the palatine a rather short, broad band which is notched posteriorly. Six barbels: those of the maxillaries extend to, or nearly to, or beyond the end of, the pectoral fin, the outer ones of the mandible to, or nearly to, its root. Head much depressed, much broader than high, its greatest width being equal to its length without snout; its upper surface is granulated; occipital process large, triangular, nearly as long as broad, joining the basal bone of the dorsal spine, which is small, crescent-shaped. Dorsal spine moderately strong, half as long as the head, or a little more than half as long, slightly serrated. Base of the adipose fin as long as that of the dorsal. Pectoral spine stronger and longer than that of the dorsal fin, serrated on both edges. Ventral fins much shorter than the pectorals, not extending on to the anal.

Cayenne, Surinam, Para, West Indies.

a. Fine specimen. South America. From Sir R. Schomburgk's Collection.
b. Young. British Guiana. Presented by Sir R. Schomburgk.
c. Adult. Demerara. Purchased of Mr. Scrivener.
d–e. Adult: stuffed. Demerara. Purchased of Mr. Scrivener.

The typical specimens of *S. herzbergii*, Bl., and of *B. cœlestinus*, M. & T., are in the Berlin Museum; Prof. Peters, who has examined them, does not consider them as distinct species.

9. **Arius dubius.**

Netuma dubia, *Bleek. Versl. en Mededeel. Acad. Wet. Amsterd.* 1862, xiv. p. 382.

B. 6. D. 1/7. A. 19. P. 1/10.

Closely allied to *A. herzbergii*.

The height of the body is contained five times and three-fifths or five times and four-fifths in the total length (without caudal), the length of the head four times and a third or four times and a sixth; the greatest width of the head is four-fifths or five-sixths of its length. Occipital process with a median keel, not much longer than broad, extending on to the small basal bone of the dorsal spine. The teeth on the palate form six contiguous patches*. The maxillary barbels reach to the base of the ventrals, the outer ones of the mandible to that of the pectorals. Dorsal spine strong, four-fifths of the length of the head, slightly serrated along both edges. Adipose fin rather longer than dorsal; the length of the latter is less than one-half of its distance from the adipose fin. Pectoral spine broader, but not longer, than that of the dorsal fin. Ventral fins much shorter than pectorals. (*Bl.*)

Surinam.

10. **Arius mesops.**

Bagrus mesops, *Cuv. & Val.* xiv. p. 456.

D. 1/7. A. 18.

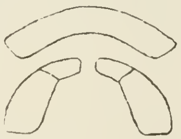
The eye is in the middle between the end of the snout and the præopercular limb. *Occipital process twice as broad as long*, terminating in a small point which is received in a notch of the nuchal plate. The maxillary barbel extends to the middle of the pectoral. Ventrals as long as pectorals. (*Val.*)

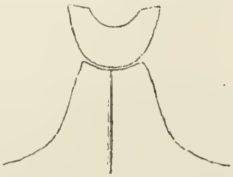
Porto Rico.

11. **Arius guatemalensis.**

D. 1/7. A. 19. P. 1/11.

The height of the body is one-sixth of the total length (without caudal). the length of the head two-sevenths; head much broader than high, its greatest width being two-thirds of its length. Eyes of moderate size, situated nearer to the end of the snout than to that of the operculum; the length of the snout is three-fifths of the width of the interorbital space. Teeth on the vomer separated in the middle, forming a pair of small quadrangular patches which are confluent with those on the palatine bones; the latter have a subelliptic form. All the teeth villiform. The maxillary barbels extend nearly to the end of the head, the outer ones of the mandible being half as long as the head. Crown of the head granular, the granulations being arranged in radiating streaks. Occipital process somewhat broader than long, triangular, with its hinder end truncated; the basal bone of the dorsal spine small, crescent-shaped. Dorsal spine of moderate strength, not quite half as long as the head, slightly serrated in front and behind; the first soft ray is longer than the spine, as high as the body. Adipose fin shorter than the dorsal. Caudal deeply forked, with the upper lobe





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* They are, apparently, similar to those of *A. herzbergii*

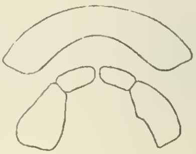
longest, its length being one-fifth of the total. Pectoral spine serrated along both edges, longer and stronger than that of the dorsal. Ventral fin shorter than pectoral. All the fins black.

Guatemala.

a. Twelve inches long. Guatemala. Purchased of Mr. Frank.
b. Fine specimen, 13 inches long. Chiapan. From the Collection of Messrs. Godman and Salvin.

12. **Arius assimilis.**

D. 1/7. A. 19. P. 1/10.



The height of the body is contained four times and two-thirds in the total length (without caudal), the length of the head thrice and three-fifths; head much broader than high, its greatest width being three-fourths of its length. Eyes rather small, situated nearer to the end of the snout than to that of the operculum; the length of the snout is three-fifths of the width of the interorbital space. *The median longitudinal fonticulus on the upper side of the head does not extend to the base of the occipital process.* Teeth on the vomer but slightly separated in the middle, forming a pair of oblong transverse patches which are confluent with those on the palatine bones; the latter are short, club-shaped. The band of intermaxillary teeth is five times as broad as long. All the teeth villiform. The maxillary barbels extend nearly to the end of the head; the length of the outer ones of the mandible is one-half or two-thirds of that of the head. Crown of the head granular, the granulations being arranged in radiating streaks. Occipital process broader than long, triangular, with its hinder end concave. The basal bone of the dorsal spine of moderate size, crescent-shaped. Dorsal spine of moderate strength, more than half as long as the head, granulated in front and slightly serrated behind; the first soft ray is longer than the spine and as high as the body. Adipose fin shorter than the dorsal. Caudal deeply forked, with the upper lobe longest, its length being contained five times and a half in the total. Pectoral spine serrated along its inner edge and on the extremity of the outer edge. Ventral fin shorter than pectoral. Sides of the body silvery; vertical fins greyish; basal half of the inner side of the paired fins black.

Guatemala.

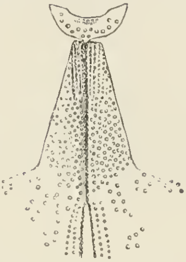
a. Fine specimen, 13 inches long. Lake of Yzabal. From the Collection of Messrs. Godman and Salvin.

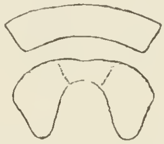
Hexanematichthys hymenorrhinos, Bleek. Versl. & Mededeel. Akad. Wetensch. Amsterd. 1862, xiv. p. 377, appears to be closely allied to the above species, and we should not hesitate to refer our specimens to it if the barbels of Bleeker's species were not much longer, those of the maxillaries extending on to the base of the ventral fin, and the outer ones of the mandible to the base of the pectoral. The specimen in the Leyden Museum is 8½ inches long.

13. Arius platypogon.

D. 1/7. A. 18. P. 1/10.

Closely allied to *A. assimilis.*





The height of the body is contained five times and a half in the total length (without caudal), *the length of the head four times*; head much broader than high, its greatest width being three-fourths of its length. Eyes of moderate size, *their diameter being more than one-half of the extent of the snout,* and two-fifths of the postorbital part of the head, which equals the width of the interorbital space. *The median longitudinal fonticulus on the upper side of the head extends to the base of the occipital process.* Teeth on the palate continuous; however, three portions may be distinguished: the central one, which is subpentagonal, broader than long, and notched anteriorly; and one on each side, which is subtriangular, and much larger than the eye. The band of intermaxillary teeth is five times as broad as long. The maxillary barbels are compressed in their basal half and extend nearly to the middle of the pectoral fin, the outer mandibulary barbels nearly to its root. Crown of the head and nape finely granular; occipital process much longer than broad, with a low, linear median ridge. The basal bone of the dorsal spine is very small, with only a few granules. Dorsal spine rather strong, a little shorter than that of the pectoral fin, three-fourths of the length of the head, and serrated along both edges; the first soft dorsal ray is higher than the body. Adipose fin shorter than dorsal. The upper caudal lobe is the longer, its length being contained four times and a third in the total. Porus axillaris present. Ventral much shorter than pectoral, which is nearly as long as the head. Sides of the body silvery; the inner side of the paired fins black.

Guatemala.

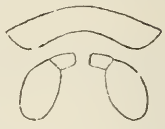
a–d. Fine specimens ($11\frac{1}{2}$ inches long). San Jose. From the Collection of Messrs. Salvin and Godman.

14. Arius seemanni.

D. 1/7. A. 19. P. 1/10.

Closely allied to *A. assimilis.*

The height of the body is contained four times and a half in the total length (without caudal), the length of the head thrice and a third; head much broader than high, its greatest width being equal to its length without snout. Eyes of moderate size, much nearer to the end of the snout than to that of the operculum; the length of the snout is three-fifths of the width of the interorbital space. *The median longitudinal fonticulus on the upper side of the head extends* *to the base of the occipital process.* Teeth on the vomer separated in the middle by a short interspace, forming a pair of small subquadrangular patches which are confluent with those of the palatines. The latter are much longer than broad, elliptical. The band of intermaxillary teeth is five and a half times as broad as long. The maxillary barbels extend nearly to the end of the head, and are about twice as long as the outer ones of the mandible. Crown of the head and nape finely granular; occipital process broader than long, with a prominent ridge along its middle. The basal bone of the dorsal spine is small, with a few fine granules. Dorsal spine of moderate strength, more than half as long as the head, serrated along both edges; the first soft ray is as high as the body. Adipose fin rather shorter than dorsal. The upper caudal lobe is the longer, two-ninths of the total length. Porus axillaris present. Ventral fin shorter than pectoral. Sides of the body silvery; basal half of the inner side of the paired fins black.



Central America.

a. Fine specimen, 12 inches long. From the Haslar Collection. Collected by Dr. Seemann.

15. **Arius surinamensis.**

Hexanematichthys surinamensis, *Bleek. Versl. & Mededeel. Akad. Wet. Amsterd.* 1862, xiv. p. 380.

B. 5. D. 1/7. A. 18. P. 1/9.

The height of the body is one-sixth of the total length (without caudal), the length of the head two-sevenths; the greatest width of the head is three-fourths of its length. Occipital process without conspicuous keel along its middle, not longer than broad, extending on to the small basal bone of the dorsal spine. The teeth on the palate form four contiguous patches or bands, the lateral bands being broader and longer than the anterior. The maxillary barbels extend to the base of the pectoral, the outer ones of the mandible somewhat beyond the gill-opening. Dorsal spine strong, half as long as the head, slightly serrated along both edges; adipose fin as long as the dorsal, its length being less than one-third of the distance between the two fins; pectoral spine longer and stronger than that of the dorsal fin; ventral fins much shorter than pectorals. Caudal deeply forked, with the upper lobe longer. (*Bl.*)

Surinam.

16. **Arius proops.**

Bagrus proops, *Cuv. & Val.* xiv. p. 457.

D. 1/7. A. 19. P. 1/11.

The eye is thrice as remote from the præopercular limb as from the end of the snout; jaws equal in length anteriorly. The teeth on the palate are divided into six portions, the two posterior being large and triangular. The maxillary barbel extends beyond the root of the pectoral. The occipital process is short, one-eighth of the length of the head (its own length included), and twice and a half as broad as long. The basal bone of the dorsal spine is quadrangular, slightly narrowed in the middle. (*Val.*)

Surinam; Porto Rico.

17. Arius passany.

Bagrus passany, *Cuv. & Val.* xiv. p. 458.

D. 1/7. A. 17.

Similar to *A. proops*.

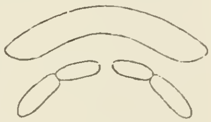
The eye is close to the end of the snout and remote from the præopercular limb; the lower jaw is the longer. Teeth on the palate and barbels similar to those in *A. proops*; occipital process shorter than in that species; basal bone of the dorsal spine subcrescentic. Ventrals longer than pectorals. (*Val.*)

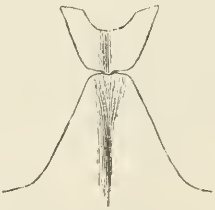
Cayenne.

18. Arius cærulescens.

D. 1/7. A. 17. P. 1/10.

The height of the body is contained about five times in the total length (without caudal), the length of the head thrice and a half or thrice and two-thirds; head much broader than high, its greatest width being three-fourths of its length. Eyes rather small, their diameter being one-half of the extent of the snout, two-sevenths of their distance from the gill-opening, and one-third of the width of the interorbital space. The teeth on the palate form a slightly curved band, composed of two vomerine patches which are much broader than long, and of a pair of palatine patches which are subcontinuous with, scarcely broader and longer than, those of the vomer. The barbels of the maxillaries extend to the middle, the outer ones of the mandible to the base of the pectoral. Crown of the head granular; occipital process broader than long, subtriangular, subtruncated behind, and slightly raised along the median line; the basal bone of the dorsal spine is subtriangular, small. Dorsal spine of moderate strength, more than half as long as the head, granulated in front and slightly serrated behind; the first soft ray is as high as the body. Adipose fin shorter than the dorsal. Caudal deeply forked, with the upper lobe longest, its length being nearly equal to that of the head. Pectoral spine serrated along its inner edge and on the extremity of its outer edge; it is as long as the head without snout. Ventral fin shorter than pectoral. Sides steel-blue, iridescent, blackish towards the back, and silvery below. Vertical fins black; inner side of the paired fins blackish.





Guatemala.

a–b. Fine specimens, 12 inches long. Huamuchal. From the Collection of Messrs. Godman and Salvin.

19. Arius troschelii.

Sciades troschelii, *Gill, Proc. Acad. Nat. Sc. Philad.* 1863, p. 171.

D. 1/7. A. 16.

The height of the body is two-ninths of the total length (without caudal); the length of the head enters three times in the length before the end of the anal fin; its width equals the interval between the snout and upper angle of præoperculum. The maxillary barbels extend to about the middle of the pectoral, the outer ones of the mandible to its base. There are three villiform patches on the palate which are almost contiguous, forming an arch: the median patch is small, rather transverse, and widest towards the front; the outer are oblong, subtriangular. The band of the upper jaw is quite wide, the lower nearly half as wide as the upper. The dorsal spine equals that of the pectoral, its length being two-thirds of that of the head. The ventrals extend to the origin of the anal. Fins blackish. (*Gill.*)

West coast of Central America.

20. Arius emphysetus.

Bagrus (Sciades) emphysetus, *Müll. & Trosch. Hor. Ichth.* iii. p. 8, and in *Schomb. Brit. Guian.* iii. p. 627.

B. 6. D. 1/7. A. 20. P. 1/11.

Head flat, rounded in front; its length is two-ninths of the total. Eyes very small; their distance from the end of the head is more than twice as great as that from the snout. Head coarsely granulated above; its occipital process short, four times as broad as long, joining the nuchal plate, which is very large, as broad as long, heart-shaped. The teeth on the palate form a broad transverse band, composed of three divisions: the middle on the vomer is square, the lateral are tapering behind; there is another band of teeth besides, posteriorly and interiorly to the palatine teeth, inserted on each side of the base of the skull. Upper jaw the longer; barbels six, flattened: the maxillary barbels extend beyond the dorsal fin, the outer ones of the mandible to the pectoral. Dorsal spine very strong, granulated, serrated at the top and posteriorly. Adipose fin shorter than dorsal. Porus axillaris very small. Ventrals shorter than pectorals. (*M. & T.*)

Surinam; British Guiana.

21. Arius valenciennesii.

Bagrus albicans, *Cuv. & Val.* xiv. p. 461. pl. 420 (not Arius albicans, *Cuv. & Val.*).

? Bagrus valenciennei, *Casteln. Anim. Amér. Sud, Poiss.* p. 31. pl. 13. fig. 1 (see p. 154).

D. 1/7. A. 19. P. 1/11.

The length of the head is one-fourth of the total length (without caudal); head one-third longer than broad. The eye is thrice as distant from the præopercular limb as from the end of the snout. Jaws equal in length anteriorly. Teeth on the palate in a broad band, with a triangular patch on each side. The maxillary barbel extends scarcely to the end of the head. Head granulated above. Occipital process very small and short, but joining the very large nuchal plate, the hinder margin of which is deeply concave. Dorsal and pectoral spines strong, granulated, moderately serrated behind; adipose fin rather longer than dorsal. (*Val.*)

Cayenne.

22. **Arius flavescens.**

Bagrus flavescens, *Cuv. & Val.* xiv. p. 462.

B. 6. D. 1/7. A. 18. P. 1/11.

The eye is much nearer to the end of the snout than to the præopercular limb; upper jaw slightly the longer. The band of teeth on the palate has its lateral portions ovate. The maxillary barbel extends to, or beyond, the middle of the pectoral. Head granulated above; occipital process very small and short, but joining the large nuchal plate, which is slightly concave behind. Dorsal and pectoral spines strong, granulated, moderately serrated behind; adipose fin one-third shorter than anal. (*Val.*)

Cayenne.

23. **Arius temminckii.**

Bagrus temminckianus, *Cuv. & Val.* xiv. p. 463.

B. 6. D. 1/6. A. 21. P. 1/11.

The upper surface of the head rather reticulated than granulated; occipital bone scarcely produced, broadly rounded behind, with a small notch in the middle, corresponding to the pointed nuchal plate. Dorsal and pectoral spines granulated in front, and only a little serrated behind. The dorsal fin is as high as the body; adipose fin one-third shorter than anal. The maxillary barbels extend on to the end of the ventrals, the outer mandibulary barbels to the middle of the pectoral. (*Val.*)

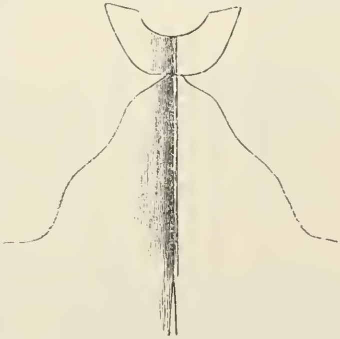
Cayenne.

c. African species.

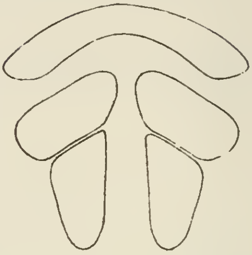
24. **Arius latiscutatus.**

D. 1/7. A. 15–17. P. 1/12. Vert. $\frac{21}{28-30}$.

Head rather broad and depressed, coarsely granulated above; the occipital process is broader than long, subtriangular, with the lateral margins undulated and with a median longitudinal ridge; the fonticulus on the upper side of the head is very narrow and tapering behind, extending to the base of the occipital process. Basal bone of the dorsal spine narrow, crescent-shaped. The length of the head is one-fourth of the total (without caudal); the eye is twice as distant from the end of the operculum as from that of the snout:



snout very broad, obtusely rounded. The teeth are villiform: the vomerine band is not quite twice as broad as that of the intermaxillaries, and divided into two by a narrow interspace; each half is about twice as broad as long, and separated from the palatine patch by a linear transverse groove, which disappears altogether in old age. The palatine teeth form a large triangular patch which is longer than broad; the patches are broader than the space between them. Dorsal and pectoral spines strong, serrated along both edges; the former is a little the shorter, and as long as the head without snout. Adipose fin short; caudal deeply forked.



West Africa.

a. Stuffed, 16 inches long. Fernando Po. Purchased of Mr. Stevens.
b–c. Skeletons, 52 and 43 inches long. West Africa. Purchased of Mr. Dalton.

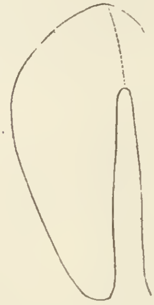
B. Teeth on the palate granular.

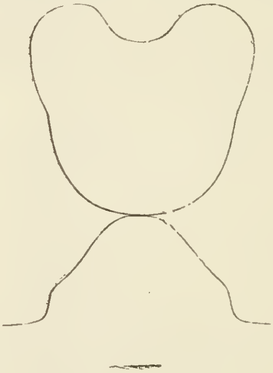
25. **Arius luniscutis.**

Arius luniscutis, *Cuv. & Val.* xv. p. 109; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 390.

D. 1/7. A. 20–21. P. 1/11. Vert. 18/31.

The height of the body is one-fifth of the total length (without caudal), the length of the head one-fourth; head depressed, much lower than broad, its greatest width being equal to the distance of the hinder nostril from the end of the opercle. Eyes small, situated in the beginning of the middle third of the length of the head; interorbital space wider than the snout is long. Teeth on the palate in very broad confluent bands, those of the palatine bones separated from each other only by a narrow space; teeth on the vomer rather obtuse. The maxillary barbels extend to, or nearly to, the end of the head; the outer mandibulary barbels are half as long as the head.





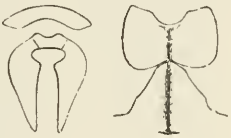
Crown of the head granular, the granulations being arranged in radiating streaks. Occipital process subsemicircular, broader than long; the basal bone of the first dorsal spine is very large, larger than the occipital process, subquadrangular, rather broader than long. Dorsal spine of moderate strength, as long as the head without snout, granulated in front, and scarcely serrated behind; the first soft ray rather longer than the spine, as high as the body. Adipose fin longer than the dorsal. Caudal deeply forked, with the upper lobe longest, its length being a little more than one-sixth of the total. Pectoral spine serrated along both edges, longer and stronger than that of the dorsal. Ventral fin shorter than pectoral. Coloration uniform.

Brazil; Surinam.

a. Fine specimen, 16 inches long. South America.

b–c. Adult. Surinam. From the Stuttgart Museum.

d. Young, 8 inches long. Brazils. Presented by Lord Stuart.—This specimen differs a little from the larger one, the differences being due probably to age. The patch of vomerine teeth is smaller and narrower; the bands of palatine teeth are more separated from each other by a free space in the middle. The basal bone of the dorsal spine is somewhat shorter, or broader. In other respects the specimens are perfectly alike.



e. Young. Old Collection.

26. Arius parkeri.

Silurus parkeri, *Traill, Mem. Wern. Soc.* 1832, vi. p. 377. pl. 6. fig. 1.
Arius quadriscutis, *Cuv. & Val.* xv. p. 111; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 389.

D. 1/7. A. 19. P. 1/11. Vert. 18/31.

Occipital process twice as broad as long; a large subquadrangular nuchal plate, emarginate anteriorly and posteriorly. The maxillary barbel extends to the middle of the opercle. The teeth on the palate are granular, and form two large ovate patches, which touch each other in their whole length. Dorsal spine slightly serrated; adipose fin nearly as long as the anal. (*Val.*)

Cayenne; Surinam.

II. Teeth on the palate in two generally widely separate patches; sometimes the vomerine teeth are present, but widely separate into two small groups which may be continuous with the palatine teeth.

A. Teeth on the palate villiform.

a. A large interneural shield on the nape.

27. Arius grandicassis.

Arius grandicassis, *Cuv. & Val.* xv. p. 54. pl. 427.

D. 1/7. A. 18. P. 1/12.

A very large bony plate between the occiput and the basal bone of the dorsal spine; this plate is separated from the occiput by a transverse groove; it is subquadrangular and nearly as broad as long. The height of the body is one-fifth of the total length (without caudal), the length of the head two-sevenths. The upper jaw projects much beyond the lower. Teeth on the palate in two widely separate triangular patches. The maxillary barbel extends to the præopercular margin. Pectoral spine very strong, as long as, but stronger than, that of the dorsal. Adipose fin longer than the dorsal. (*Val.*)

South America.

Valenciennes briefly mentions two other species which appear to agree with *A. grandicassis* in having a large dorsal plate behind the occiput; but as they are said to have only six dorsal rays, we dare not refer them to this genus:—

a. *Arius stricticassis*, Cuv. & Val. xv. p. 58. D. 1/6. A. 18. P. 1/12. Dorsal plate thrice as long as broad; barbels short.—Cayenne.

b. *Arius parmocassis*, Cuv. & Val. xv. p. 57. D. 1/6. A. 15. P. 12. Dorsal plate ovate, narrower in front than behind; the palatine teeth form two large patches, the anterior and interior angles of which are produced inwards, without touching each other. Barbels rather short.—Bahia.

There is evident confusion in Valenciennes's account of these two fishes; he commences the description of his second species (*A. parmocassis*) by comparing it with *two* preceding species; and the formula of the fins also is given in an unusual form.

Bagrus valenciennei, Casteln. Anim. Amér. Sud, Poiss. p. 31. pl. 13. fig. 1, appears to belong to this group of Siluroids, and is possibly identical with *A. parmocassis*, or with *Bagrus albicans* (see p. 150).

b. No large interneural shield on the nape.

a. African species.

28. Arius heudelotii.

Arius heudelotii, *Cuv. & Val.* xv. p. 73. pl. 428.

D. 8. A. 16. P. 10.

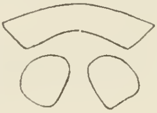
The length of the head is one-third of the total (without caudal). Crown of the head granulated. The maxillary barbel extends beyond the operculum. Basal bone of the dorsal spine small; dorsal and pectoral spines strong and very long, serrated along both edges. Adipose fin very short. The upper caudal lobe is the longer, one-sixth of the total length. The teeth on the palate are villiform, and form two small, widely separate patches. (*Val.*)

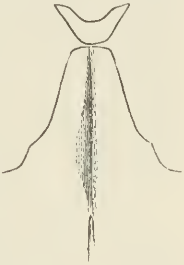
Senegal.

29 Arius parkii.

D. 1/7. A. 20. P. 1/10.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head four times or four times and a third. Head depressed, broader than high, its greatest width being three-quarters of its length; snout of moderate length, obtuse, its extent being three-fifths of the width of the interorbital space. The eye is situated much nearer to the end of the snout than to that of the operculum; its diameter is one-sixth of the length of the head, and two-sevenths of the width of the interorbital space. The teeth on the palate are villiform, and form a pair of separate, irregularly rounded patches. The maxillary barbels extend to the base or beyond the middle of the pectoral fin, the outer ones of the mandible to its root or to its middle. The crown of the head is slightly granulated; the occipital process is triangular, as long as broad, provided with a sharp median ridge; basal bone of the dorsal spine small, crescent-shaped. Dorsal spine long and rather strong, nearly as long as, or shorter than, the head, slightly serrated in front and behind; the length of the first soft ray exceeds that of the spine and of the head. Adipose fin much shorter than dorsal. Caudal deeply forked, with the upper lobe longest, one-fifth of the total length. Pectoral spine as strong and long as that of the dorsal fin, serrated along both edges. Ventral shorter than pectoral. Fins and barbels black.





River Niger.

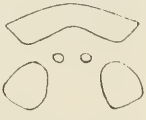
a, b. Eleven and nine inches long. Niger Expedition.
c. Thirteen inches long. Lagos. From the Collection of J. Wood, Esq.

β. South American species.

30. Arius milberti.

Arius milberti, *Cuv. & Val.* xv. p. 74; *Hyrtl, Denkschr. Acad. Wiss. Wien,* 1859, xvi. p. 17.

D. 1/7. A. 18. P. 1/10. Vert. 19/33.



The height of the body is contained five times and a half in the total length (without caudal), the length of the head thrice and two-thirds; head depressed, much broader than high, its greatest width being equal to its length without snout. Eyes situated much nearer to the end of the snout than to that of the opercle. Teeth on the vomer in two small, separate groups, which are either separate from, or continuous with, the much larger rounded patches of palatine teeth. All the teeth villiform. The maxillary barbels extend to, or nearly to, the end of the operculum; the outer ones of the mandible are half as long as the head. Crown of the head granulated; occipital process rather broader than long, triangular, with a ridge along the middle; the basal bone of the dorsal spine is small. Dorsal spine rather strong, three-fifths as long as the head, granulated in front and serrated behind. Adipose fin shorter than the dorsal. Pectoral spine serrated interiorly and towards the point on the outer edge.

Southern States of North America.

a–b. From 11–12 inches long. From the Haslar Collection.

31. **Arius rugispinis.**

Arius rugispinis, *Cuv. & Val.* xv. p. 77; *Kner, Sitzgsber. Wien. Acad.* xxvi. p. 388.

D. 1/7. A. 21. P. 1/11.

The length of the head is one-fifth of the total (with the caudal). The occipital process is longer than broad, its length being two-fifths of that of the remaining portion of the head. Eye small, its diameter being one-fifth of the width of the interorbital space. Head coarsely granulated above; basal bone of the dorsal spine small. Teeth on the palate in two widely separate, rather small, ovate patches. The maxillary barbel extends to the middle of the opercle. The spines are very strong, entirely granulated; that of the dorsal fin is scarcely denticulated. Adipose fin nearly as long as the anal. (*Val.*)

Cayenne. (Specimens from 12–15 inches long.)

Arius dieperinki, Bleek. Versl. & Mededeel. Akad. Wetensch. 1862, xiv. p. 375, is perhaps identical with the above species; its head is longer than it would appear to be in *A. rugispinis*, according to Valenciennes's description, being one-fourth of the total length in the specimen described by Bleeker.

32. **Arius phrygiatus.**

Arius phrygiatus, *Cuv. & Val.* xv. p. 79.

D. 1/7. A. 19. P. 1/11.

The length of the head is one-fifth of the total (with the caudal); the diameter of the eye is one-fifth of the width of the interorbital space. Occipital process much longer than broad, its length being one-third of that of the remaining portion of the head. The maxillary barbel extends to the middle of the opercle. Teeth on the palate villiform, forming two widely separate ovate patches. Spines of the fins rather strong, finely serrated along both edges. Adipose fin as long as the anal. (*Val.*)

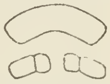
Cayenne. The typical specimen, 6½ inches long, is said to be in the Leyden Museum, but it could not be found by Bleeker when he examined the Siluroids of that genus.

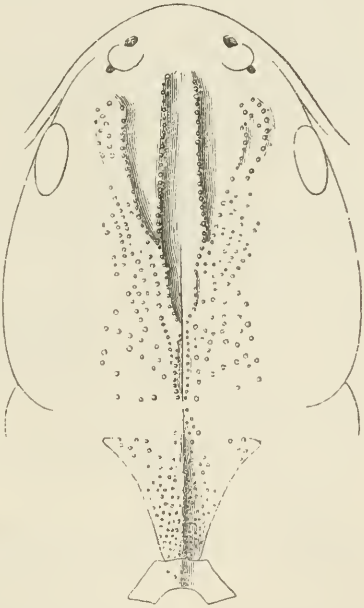
γ. *Pacific species.*

33. Arius dasycephalus.

D. 1/7. A. 23. P. 1/11.

The height of the body is one-fifth of the total length (without caudal), the length of the head two-ninths. Head small, broader than high, its greatest width being four-fifths of its length; snout of moderate length, rounded, its extent being three-fifths of the width of the interorbital space. The eye is situated much nearer to the end of the snout than to that of the operculum; its diameter is one-sixth of the length of the head, and one-third of the width of the interorbital space. Cleft of the mouth narrow. The teeth on the palate are villiform, and form a pair of separate, transverse, quadrangular patches, each of which is broader than long, and again composed of two portions. The maxillary barbels extend to the middle, the outer of the mandible to the root of the pectoral fin. The crown of the head is coarsely granulated, the granules forming two bands diverging in front and extending to the snout. There is a pair of prominent, parallel, granulated ridges along the middle of the forehead, reaching to between the nostrils. Occipital process triangular, as broad at the base as long, elevated into a ridge along its middle; basal bone of the dorsal spine small, crescent-shaped. Dorsal spine of moderate strength, three-fourths of the length of the head, slightly serrated in front and behind; the first soft ray is much longer than the spine and higher than the body. Adipose fin as long as dorsal. Caudal deeply forked, with the upper lobe longest, one-fifth of the total length. Pectoral spine rather stronger, but scarcely longer, than that of the dorsal fin, serrated along both edges. Ventral rather shorter than pectoral. Fins blackish.





Sandwich Islands.

a. Eleven inches long. Oahu. From the Haslar Collection.—This specimen is a pregnant female; on opening the left ovarium nine eggs may be seen, developed to the size of a small cherry.

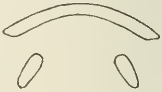
δ. East Indian species.

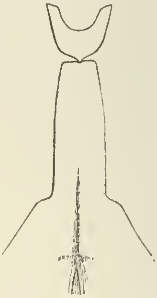
34. **Arius truncatus.**

Arius truncatus, *Cuv. & Val.* xv. p. 64; *Cant. Mal. Fish.* p. 256; *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 426, and *Atl. Ichth. Silur.* p. 33. tab. 56.
Cephalocassis truncatus, *Bleek. Prodr. Silur.* p. 108.

B. 6. D. 1/7. A. 23–24. P. 1/9. Vert. 15/33.

The height of the body is one-half of the length of the head, which is one-third of the total (without caudal). Head elongate and depressed, its greatest depth being two-thirds of its width; the latter is contained once and two-thirds in its length. Snout broad, of moderate length, spatulate, its length being one-fourth of that of the head. The diameter of the eye is one-seventh or one-tenth of the length of the head; interorbital space convex; the upper eyelid is broad, transparent. The teeth on the palate are villiform and confined to the palatine bones, where they form an oblique elliptic short patch on each side. The maxillary barbels extend to, or scarcely to, the operculum; the outer and inner mandibulary barbels are nearly of equal length, half as long as the head. The crown of the head is granular; the occipital process is narrow, oblong, about thrice as long as broad; basal bone of the dorsal spine small, crescent-shaped. Dorsal spine strong and long, four-fifths of the length of the head, serrated along both edges; the first soft dorsal ray as long as the head. Adipose fin very short and elevated. Caudal forked, with the lobes obtusely rounded, short, its length being one-half of that of the head; the upper lobe sometimes produced into a short filament. Pectoral spine as strong as, but much shorter than, that of the dorsal fin, serrated along both edges. Ventral shorter than pectoral. Fins whitish.





East Indies.

a–b. From 9 to 12 inches long. Siam. Purchased of Mr. Jamrach.
c–d. Adult and half-grown: skins. Pinang. From Dr. Cantor's Collection.
e. Half-grown. From Dr. P. v. Bleeker's Collection.
f. Adult: skeleton. Siam. Purchased of Mr. Jamrach.

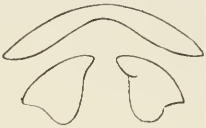
35. **Arius cælatus.**

Arius cœlatus, *Cuv. & Val.* xiv. p. 66; *Bleek. Atl. Ichth. Silur.* p. 35. tab. 53.
—— æquibarbis, *Cuv. & Val.* xiv. p. 68.
—— granosus, *Cuv. & Val.* xiv. p. 69.
—— cœlatoides, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 32.
—— microgastropterygius, *Bleek. l. c.* p. 33.
—— clypeaster, *Bleek. l. c.* p. 34.
—— clypeastroides, *Bleek. l. c.* p. 34.

Arius chondropterygius, *Bleek. l. c.* p. 35.
—— melanopterygius, *Bleek. l. c.* xxii. *Madur.* p. 10.
Cephalocassis cælatus, *Bleek. Prodr. Silur.* p. 110.

D. 1/7. A. 19–20. P. 1/9.

The height of the body is one-fourth or one-fifth of the total length (without caudal), the length of the head two-sevenths or one-fourth. Head broader than high, its greatest width being equal to its length without snout; snout short and obtuse, its extent being one-half of the width of the interorbital space. Teeth on the palate in two widely separate subtriangular patches of moderate size, the vomerine teeth being more or less confluent with those of the palatines. The maxillary barbel extends to the middle of the pectoral fin, the outer of the mandible being somewhat shorter. The upper surface of the head slightly granulated. Occipital process of moderate length, not much broader at the base than at its concave end, elevated along the middle. The basal bone of the dorsal spine is small, crescent-shaped. Dorsal spine very strong, particularly in its basal half, which is granulated, tapering from the middle; it is as long as the head. Adipose fin much shorter than dorsal. Pectoral spine shorter and less strong than that of the dorsal fin. Adipose fin black, with its posterior margin yellowish.



East Indies.

a. Eleven inches long. Purchased of Mr. Frank.

b–c. Seven inches long. Siam. Purchased of Mr. Jamrach.—These specimens have the soft appendage of the dorsal spine produced into a long filament.

36. Arius sinensis.

Arius sinensis, *Cuv. & Val.* xv. p. 72.

D. 7. A. 13.

Occipital process subquadrangular, elongate. Maxillary barbel as long as the head; those of the mandible equal in length, and half as long as the head. (*Val.*)

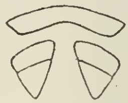
China.

37. Arius venosus.

? Arius venosus, *Cuv. & Val.* xv. p. 69.
Arius venosus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 39, and *Atl. Ichth. Silur.* p. 33. tab. 54. fig. 1.
—— læviceps, *Bleek. l. c.* p. 38.
—— micruropterygius, *Bleek. l. c.* p. 38.
—— macruropterygius, *Bleek. l. c.* p. 37.
—— manjong, *Bleek. l. c.* p. 36.
—— micronotacanthus, *Bleek. l. c.* p. 36.
Cephalocassis venosus, *Bleek. Prodr. Silur.* p. 113.

D. 1/7. A. 18–19. P. 1/10.

The height of the body is one-fifth or a little more than one-fifth of the total length (without caudal), the length of the head one-fourth; head broader than high, its greatest width being contained once and a fourth or once and a third in its length. The diameter of the eye is one-fourth of the length of the head, and more than one-half of the width of the interorbital space. Occipital process triangular, rather longer than broad, with a keel along its middle; basal bone of the dorsal spine small. Snout not much longer than the eye. Teeth on the palate villiform, forming two triangular patches, which are somewhat smaller than the eye, as long as broad, and approximate to each other anteriorly, their points being directed backwards. The maxillary barbels extend to, or beyond, the root of the pectoral. The soft dorsal fin is higher than the body; its spine is as long, or nearly as long, as the head, serrated behind, and terminating in a soft filament. Adipose fin shorter than the dorsal. Pectoral spine nearly as long as that of the dorsal fin. Fins yellowish.



East Indian Archipelago.

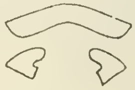
a. From Dr. P. v. Bleeker's Collection.

38. **Arius utik.**

Arius utik, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 40, and *Atl. Ichth. Silur.* p. 34. tab. 51. fig. 2.
Cephalocassis utik, *Bleek. Prodr. Silur.* p. 115.

D. 1/7. A. 18–19. P. 1/10.

The height of the body is contained five times and a quarter or four times and three-quarters in the total length (without caudal), the length of the head thrice and a half; head broader than high, its greatest width being two-thirds of its length. The diameter of the eye is one-fourth or one-fifth of the length of the head, and rather more than one-half of the width of the interorbital space. The occipital process is triangular, but little longer than broad, slightly granulated, and provided with a median keel. Basal bone of the dorsal spine small. Snout longer than the eye. The teeth on the palate are villiform, forming two triangular patches, the point of which is obliquely directed forwards; these patches are much smaller than the eye. The maxillary barbels extend to the root of the pectoral. The soft dorsal fin is higher than the body; its spine is slender, two-thirds of the length of the head, serrated behind, and terminating in a soft filament. Adipose fin rather shorter than dorsal. Pectoral spine slender, nearly as long as that of the dorsal fin. Fins yellowish.



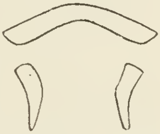
Java.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

39. **Arius leptonotacanthus.**

Arius leptonotacanthus, *Bleek. Verh. Bat. Gen.* xxii. *Madura*, p. 11, and *Atl. Ichth. Silur.* p. 32. tab. 54. fig. 2.
Cephalocassis leptonotacanthus, *Bleek. Prodr. Silur.* p. 105.

D. 1/7. A. 20. P. 1/11.



The height of the body is contained four times and two-fifths in the total length (without caudal), the length of the head three times; head broader than high, its greatest width being contained once and two-fifths in its length. The diameter of the eye is one-sixth of the length of the head, and two-sevenths of the width of the interorbital space. The occipital process is triangular, shorter than broad, elevated along the middle; the basal bone of the dorsal spine small. Snout twice as long as the eye. The teeth on the palate are villiform, and form two separate elongate patches, slightly bent, narrow, and not much shorter than the eye, somewhat convergent posteriorly. The maxillary barbels extend to the base of the pectoral, the outer ones of the mandible to the gill-opening. Lateral line bifurcate at the base of the caudal fin. The soft dorsal fin as high as the body, with its spine rather slender, two-thirds as long as the head, and serrated posteriorly. Adipose fin much shorter than the dorsal. Pectoral fins two-thirds as long as the head; their spine is stronger, but little shorter than that of the dorsal fin. Caudal with the lobes pointed, its length being two-elevenths or one-sixth of the total. Fins yellowish.

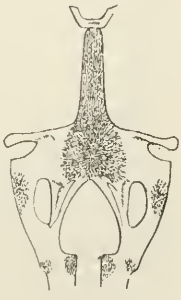
Madura.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

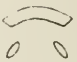
40. **Arius melanochir.**

Arius melanochir, *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 590.
Cephalocassis melanochir, *Bleek. Prodr. Silur.* p. 103, and *Atl. Ichth. Silur.* p. 30. tab. 52.

B. 6. D. 1/7. A. 18. P. 1/12.



The height of the body is contained four times and two-thirds in the total length (without caudal), the length of the head four times or four times and a half; the height and the width of the head are contained once and a third or once and two-fifths in its length. The diameter of the eye is one-seventh or one-eighth of the length of the head, and two-fifths or one-third of the width of the interorbital space. The fonticulus on the upper side of the head is much dilated behind, heart-shaped; there is another ovate groove on each side of this dilatation. The occipital process is narrow; the basal bone of the dorsal spine small. Snout twice or thrice as long as the eye. The maxillary barbels extend somewhat



beyond the head, the outer ones of the mandible to the base of the pectoral. The teeth on the palate form two widely separate, elliptic, oblique patches, which are shorter than the eye. The soft dorsal fin is as high as the body; its spine is very strong, but a little shorter than the head, and serrated along both edges. Adipose fin longer than the anal. Pectorals scarcely shorter than the head, with a very strong spine, which is as long as that of the dorsal fin. Fins yellowish, blackish in the middle.

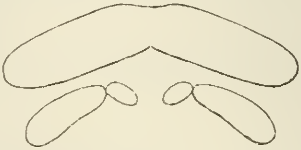
Sumatra and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

41. **Arius stormii.**

Cephalocassis stormii, *Bleek. Prodr. Silur.* p. 246.
Hemiarius stormii, *Bleek. Atl. Ichth. Silur.* p. 29. tab. 100.

D. 1/7. A. 16. P. 1/11.



The height of the body is contained four times and three-quarters or four times and a half in the total length (without caudal), the length of the head thrice and a half. Head depressed, broader than long, its greatest width being contained once and a fourth in its length. The diameter of the eye is one-ninth of the length of the head, and one-third of the width of the interorbital space. Crown of the head granular; occipital process triangular, rather longer than broad; basal bone of the dorsal spine small. Snout depressed, thrice as long as the eye, with the upper jaw projecting beyond the lower. The teeth on the vomer form two small, round, separate patches, contiguous with the palatine bands, which are twice as long as broad. The maxillary barbel extends to the opercle. The soft dorsal fin is higher than the body; its spine is very strong, scarcely shorter than the head, granulated in front and serrated behind. The adipose fin is nearly as long as the dorsal and anal. Pectoral spine very strong, shorter than that of the dorsal fin. Fins yellowish.

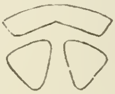
River Mussi (Sumatra).

a. Type of the species. From Dr. P. v. Bleeker's Collection.

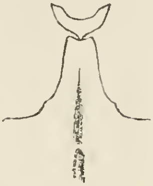
42. **Arius sumatranus.**

Bagrus sumatranus, *Bennett, in Life of Raffles,* p. 691.

D. 1/7. A. 19. P. 1/9.



The length of the head is contained thrice and three-quarters in the total (without caudal); its greatest width equals its length without snout. Teeth on the palate in two triangular patches, entirely separated along the middle. Six barbels: those of the maxillaries extend to the end of the head, the outer of the mandibles to the base of the pectoral. Crown of the head with some scattered granulations; occipital plate triangular, elevated along the middle, as long as broad; the basal bone of the dorsal spine scarcely crenulated. Dorsal spine of moderate strength, as long as the head without snout, serrated behind; the soft dorsal pointed; adipose fin short. Pectoral spine (broken) scarcely stronger than that of the dorsal fin, serrated interiorly. Ventral fins large, extending beyond the origin of the anal, as long as the pectoral.



Sumatra.

a. Nine inches long: not good state. From Sir S. Raffles's Collection.—Type of the species.

B. Teeth on the palate granular or obtusely conical.

a. Teeth on the palate in four groups, those of the vomer being present.

43. Arius dussumierii.

Arius dussumieri, *Cuv. & Val.* xv. p. 84.

D. 1/7. A. 14.

The length of the head is two-sevenths of the total (without caudal); it is broader than high, its greatest width being three-fourths of its length. Head granulated above; the occipital process is triangular, sharply keeled along the middle, longer than broad, with the lateral margins nearly straight. The teeth on the palate are obtusely conical, arranged in four patches: a smaller one on each side of the vomer, and a larger one on each palatine bone. The maxillary barbels extend to the root of the pectoral. Dorsal fin higher than the body; its spine is rather strong, slightly serrated along both edges, and as long as the head without snout; pectoral spine as strong as that of the dorsal fin.

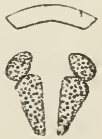
Coast of Malabar. Ceylon.

a. Stuffed. Ceylon. From Dr. Kelaart's Collection.

44. Arius kirkii.

D. 1/7. A. 17. P. 1/12.

The height of the body is one-fifth of the total length (without caudal), the length of the head two-sevenths; head not much depressed, granulated above. The occipital process is subtriangular, longer than broad, with straight lateral margins and with a slight median longitudinal ridge. Teeth on the palate granular, in four patches: each vomerine patch is somewhat rounded and not much smaller than the eye; its distance from the intermaxillary teeth equals its own diameter; it is separated by a narrow groove only from the palatine patch, which is elongate, tapering behind; the two palatine patches are convergent behind. The maxillary barbel extends to the middle, the outer one of the mandible to the base, of



the pectoral. The soft dorsal fin is rather higher than the body; its spine is strong, two-thirds as long as the head, and finely serrated along both edges. The pectoral spine is somewhat shorter, and not stronger, than that of the dorsal. Adipose fin very short. Coloration uniform.

Zambesi.

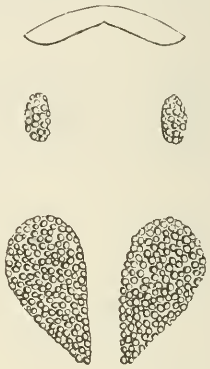
a. Skin, 8 inches long. Shupanga. Presented by Dr. Kirk.

45. **Arius tonggol.**

Arius tonggol, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 48.
—— crossocheilos, *Bleek. l. c.* p. 46.
Ariodes tonggol, *Bleek. Prodr. Silur.* p. 83, and *Atl. Ichth. Silur.* p. 39. tab. 57.

D. 1/7. A. 18. P. 1/11.

The height of the body is contained five times in the total length (without caudal), the length of the head thrice and a half or thrice and four-fifths; head depressed, much broader than high, its width being two-thirds of its length. The occipital process is triangular, with the sides convex, a little longer than broad, and much elevated along its middle; basal bone of the dorsal spine small. Teeth on the palate granular, forming four separate groups: two small ones on the vomer, and one oblong on each palatine: those on the vomer are half as large as the eye. The palatine bands convergent behind. The maxillary barbels extend to the opercles. The soft dorsal fin is rather higher than the body; its spine is of moderate strength, its length being contained once and a third in that of the head; it is granular in front, and serrated behind. Adipose fin shorter than the dorsal; the pectoral spine is stronger than, and as long as, that of the dorsal fin. Fins yellowish.



Java, Sumatra, Bintang, Banka.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

46. **Arius argyropleuron**

Arius argyropleuron, (*Kuhl & van Hass.*) *Cuv. & Val.* xv. p. 104.
—— acutus, *Bleek. Verh. Bat. Genootsch.* xxi. *Silur. Bat.* p. 41.
—— hamiltonis, *Bleek. l. c.* p. 47.
Ariodes acutus, *Bleek. Prodr. Silur.* p. 87.
—— argyropleuron, *Bleek. Atl. Ichth. Silur.* p. 40. tab. 59.

This species agrees with *A. tonggol* in almost every point, but the vomerine teeth are reduced to a rudimentary, minute patch on each side; and the lateral margins of the occipital process are straight instead of being slightly convex.

Java and Sumatra.

a. Adult. From Dr. P. v. Bleeker's Collection.
b. Half-grown. From Dr. P. v. Bleeker's Collection.—Type of *Arius acutus*.

47. Arius macrocephalus.

Arius macrocephalus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 40.
Ariodes macrocephalus, *Bleek. Prodr. Silur.* p. 85, and *Atl. Ichth. Silur.* p. 39. tab. 58.

B. 6. D. 1/7. A. 20. P. 1/11

The height of the body is one-fifth or two-ninths of the total length (without caudal), the length of the head one-third; head broader than high, its greatest width being three-fifths of its length. The eyes are situated nearly entirely in the anterior half of the head. Occipital process triangular, twice as long as broad; basal bone of the dorsal spine small. The vomerine teeth form two minute patches, but are deciduous with age; the teeth on the palatine bones are granular, and form an ovate patch on each side, which is about as large as the eye. The maxillary barbels extend to the opercles, those of the mandible to the gill-opening. Dorsal fin nearly as high as the body; its spine is slender, scarcely serrated, two-thirds or three-fifths of the length of the head. Adipose fin much shorter than dorsal; the pectoral spine is shorter, but scarcely stronger, than that of the dorsal fin, and strongly serrated; pectoral fins two-thirds of the length of the head. Adipose fin with a black spot superiorly.

Java.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

48. Arius liocephalus.

Arius leiotetocephalus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 48.
? Ariodes meyenii, *Müll. & Trosch. Hor. Ichth.* iii. p. 9.
Ariodes leiocephalus, *Bleek. Prodr. Silur.* p. 88, and *Atl. Ichth. Silur.* p. 40. tab. 60. fig. 2.

B. 6. D. 1/7. A. 15–16. P. $\frac{1}{12-13}$.

The height of the body is contained five times and a fourth or four times and two-thirds in the total length (without caudal), the length of the head thrice and a half or thrice and two-thirds; head broader than high, its greatest width being contained once and two-fifths or once and one-third in its length. Head nearly smooth above, but slightly granulated in old individuals. The occipital process is ovate, with the lateral margins convex, narrowed at its base. The teeth on the palate are granular, in four patches: a small patch on each side of the vomer, and an elongate and convex one along each palatine bone; the palatine patches divergent behind. The maxillary barbels extend to the opercle. Dorsal fin about as high as the body; its spine is strong, nearly smooth behind, and two-thirds or three-quarters of the length of the head. Pectorals shorter than the head, with their spine as long as that of the dorsal fin.

Java, Singapore, and Celebes.

a. Adult. Purchased of Mr. Frank.

Ariodes meyenii, M. & T., appears to be founded on an old example of this species.

49. Arius polystaphylodon.

Arius polystaphylodon, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 40.
Ariodes polystaphylodon, *Bleek. Prodr. Silur.* p. 90, and *Atl. Ichth. Silur.* p. 41. tab. 60. fig. 3.

B. 6. D. 1/7. A. 15–16. P. 1/12.

The height of the body is rather less than one-fifth of the total length (without caudal), the length of the head two-sevenths Head granulated above; the occipital process is triangular, much longer than broad, with the lateral margins convex. The teeth on the palate are obtusely conical, arranged in four patches: a small ovate patch on each side of the vomer, and an elongate patch along each palatine bone; the palatine patches slightly divergent behind. The maxillary barbels extend to the root of the pectoral. Dorsal fin rather higher than the body; its spine is of moderate strength, slightly serrated behind, and three-fifths of the length of the head. The pectorals are much shorter than the head, and their spine is scarcely longer than that of the dorsal fin.

Java and Sumatra.

a. Type of the species: very bad state. From Dr. P. v. Bleeker's Collection.

50. Arius goniaspis.

Arius goniaspis, *Bleek. Act. Soc. Sc. Ind. Neerl.* iii. *Sumatra*, vi. p. 44.
Ariodes goniaspis, *Bleek. Prodr. Silur.* p. 91, and *Atl. Ichth. Silur.* p. 42. tab. 60. fig. 1.

B. 6. D. 1/7. A. 16. P. 1/11.

The height of the body is contained five times in the total length (without caudal), the length of the head thrice and two-fifths or thrice and three-quarters. Head granulated above; occipital process triangular, with the lateral margins straight, broader than long. The teeth on the palate are granular, arranged in four groups: a small ovate patch on each side of the vomer, and a flat elongate patch along each palatine bone; the palatine patches divergent behind. The maxillary barbels extend to the extremity, the outer ones of the mandible to the base, of the pectorals. Dorsal fin rather higher than the body; its spine is of moderate strength, but slightly serrated, and three-fourths or three-fifths of the length of the head. The length of the pectorals is three-fourths or five-sixths of that of the head; their spine is similar to that of the dorsal fin.

Sumatra.

a. Young. Type of the species. From Dr. P. v. Bleeker's Collection.

b. Teeth on the palate in two groups.

a. East Indian species.

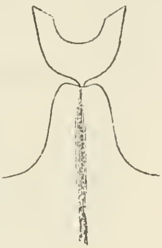
51. Arius maculatus.

? Silurus maculatus, *Thunb. Vet. Acad. Nya Handl.* 1792, xiii. p. 31. taf. 1. fig. 2.

? Silurus ocellatus, *Bl. Schn.* p. 379.
? Pimelodus arius, *Ham. Buch.* pp. 170, 376.
Arius arius, *Cuv. & Val.* xv. p. 102; *Bleek. Silur.* p. 72.
—— gagorides, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 42.
—— chondropterygioides, *Bleek. l. c.* p. 44.
—— angulatus, *Bleek. l. c.*
—— heckelii, *Bleek. l. c.*
—— borneensis, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 67.
Pseudarius arius, *Bleek. Atl. Ichth. Silur.* p. 36. tab. 49.

D. 1/7. A. 20–22. P. 1/10.

The height of the body is contained four times and two-fifths or five times in the total length (without caudal), the length of the head thrice and two-fifths or thrice and a quarter; head rather broader than high, its greatest width being two-thirds or three-quarters of its length. Occipital process granulated, subtriangular, scarcely longer than broad. The band of intermaxillary teeth is six times as long as broad; teeth on the palate granular, in two separate semiovate patches. The maxillary barbels are considerably shorter than the head. Dorsal fin higher than the body; its spine is strong, serrated along both edges, and it is contained once and a fifth or once and two-thirds in the length of the head. Adipose fin rather shorter than dorsal. Pectoral two-thirds or five-sixths of the length of the head, with its spine nearly as long as that of the dorsal fin. Adipose fin with a large black spot.



East Indies.

a. Adult. From Dr. P. v. Bleeker's Collection.

52. Arius pidada.

Arius pidada, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 43, and *Prodr. Silur.* p. 74.
—— viviparus, *Bleek. l. c.* p. 45.
Pseudarius pidada, *Bleek. Atl. Ichth. Silur.* p. 37. tab. 50.

This species is very similar to *Arius maculatus*, but differs in having a somewhat shorter head, the length of which is contained thrice and two-thirds or four times in the total (without caudal).

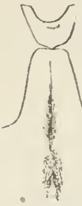
Java and Sumatra.

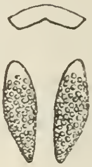
a. Type of the species. From Dr. P. v. Bleeker's Collection.

53. Arius macracanthus.

D. 1/7. A. 19. P. 1/10.

The height of the body is one-fifth of the total length (without caudal), the length of the head two-sevenths. Head as broad as high, its greatest width being two-thirds of its length; its upper surface is granulated; a lanceolate smooth groove divides the upper surface of the head into two halves, and does not quite extend backwards to the base of the occipital process; occipital process triangular, with the lateral margins straight, longer than broad, and with a slight keel along the middle. Each half of the intermaxillary band of teeth is twice as broad as long; no teeth on the vomer; the palatine teeth are granular, placed far backwards, in two convex, oblong-ovate patches convergent behind. The maxillary barbels extend to the end of the head. Dorsal fin much higher than the body; its spine is strong and long, five-sixths of the length of the head, finely serrated along both edges. Adipose fin very short, but rather high, deep black in its upper half. Caudal deeply forked. The pectoral spine is nearly as long as the head, and extends beyond the vertical from the last ray of the dorsal fin.





Siam.

a. Seven and a half inches long. Purchased of Mr. Jamrach.

54. **Arius gagora.**

Pimelodus gagora, *Ham. Buch.* pp. 167, 376. pl. 10. fig. 54.
Arius gagora, *Cuv. & Val.* xv. p. 99; *Bleek. Verh. Bat. Gen.* xxv. *Bengal.* p. 119.

D. 1/7. A. 18–19. P. $\frac{1}{10-11}$. Vert. 16/19.

The length of the head is two-ninths of the total length (with the caudal); it is broader than high, its greatest width being three-quarters of its length. The occipital process is granular, longitudinally keeled, as broad as long. The maxillary barbels extend somewhat beyond the head. The teeth on the palate are granular, and form two separate oblong-triangular patches. Dorsal fin higher than the body; its spine is strong, serrated along both edges, and three-quarters or two-thirds of the length of the head; pectorals rather shorter than the head, their spine being somewhat longer than that of the dorsal fin. Adipose fin with a large blackish spot.

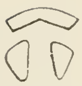
Ganges.

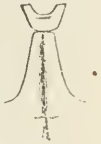
55. **Arius falcarius.**

? Tachisurus chinensis, *Lacép.* v. p. 151. pl. 5. fig. 2.
? Pimelodus tachisurus, *Cuv. & Val.* xv. p. 163.
Arius falcarius, *Richards. Voy. Sulph. Fish.* p. 134. pl. 62. figs. 7–9.
Bagrus crinalis, *Richards. Ichth. Chin.* p. 282.
Pimelodus mong, *Richards. Ichth. Chin.* p. 286.
Arius schlegelii, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 146.

D. 1/7. A. 18–19. P. 1/11. Vert. 18/27.

The height of the body is one-fifth or a little more than one-fifth of the total length (without caudal), the length of the head one-fourth or two-sevenths. Head rather broader than high. The snout is much longer than the eye, the diameter of which is one-fifth or one-seventh of the length of the head, and one-third or one-fourth of the width of the interorbital space. The teeth on the palate are granular,





and form a pair of separate triangular patches, each of which is longer than broad, or as long as broad, and not far distant from the intermaxillary band. The maxillary barbels extend to, or somewhat beyond, the opercle. Crown of the head granulated; occipital process triangular, rather longer than broad, elevated into a ridge along its middle; the basal bone of the dorsal spine is small, crescent-shaped. Dorsal spine of moderate strength, granulated in front and serrated behind; sometimes with a long soft filament; its length is equal to, or rather more than, that of the head without snout. The soft dorsal is higher than the body. Adipose fin shorter than the dorsal. Pectoral spine stronger and but little shorter than that of the dorsal fin.

Chinese Seas.

a–e. Adult and half-grown. Island of Formosa. From Consul Swinhoe's Collection.
f. Fourteen inches long: stuffed. China. Presented by J. R. Reeves, Esq.
g. Six and a half inches long: stuffed. China. Presented by J. R. Reeves, Esq.—Type of the species.
h. Young. Canton. From the Haslar Collection.
i. Young. Amoy. From Consul Swinhoe's Collection.
k. Seven and a half inches long. From the Haslar Collection.
l. Young. From the Collection of the Zoological Society.
m. Adult. Old Collection.
n. Adult: skeleton. Formosa. From Consul Swinhoe's Collection.

56. Arius macronotacanthus.

Arius macronotacanthus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 32, and *Atl. Ichth. Silur.* p. 32. tab. 55.
Cephalocassis macronotacanthus, *Bleek. Prodr. Silur.* p. 106.
Arius arius, *Cant. Mal. Rept.* p. 258.

D. 1/7. A. 18. P. 1/9.

The height of the body is two-ninths of the total length (without caudal), the length of the head two-sevenths; head nearly as high as broad, its greatest width being contained once and two-fifths in its length. The diameter of the eye is contained five times and a half in the length of the head, and twice and a half in the width of the interorbital space. The occipital process is triangular, shorter than broad; the basal bone of the dorsal spine small. Snout less than twice as long as the eye, not projecting beyond the cleft of the mouth. Teeth on the palate obtusely conical or granular, forming two separate elliptic patches, which are as long as the eye, and much divergent behind. The maxillary barbels extend to the middle, the outer ones of the mandible to the base, of the pectoral fin. Lateral line bifurcate at the base of the caudal. The soft dorsal fin is higher than the body, with the spine very strong, especially at the base, as long as the head, and slightly serrated along both edges. Adipose fin shorter than dorsal. The pectorals are two-thirds as long as the head; their spine is strong, and shorter than that of the dorsal fin. Caudal fin with the lobes pointed, nearly one-sixth of the total length. Adipose fin with a large black spot, the other fins yellowish.

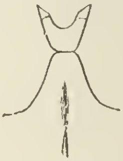
Java and Sumatra; Pinang.

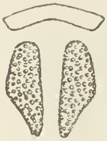
a. Type of the species. From Dr. P. v. Bleeker's Collection.
b–c. Half-grown: skins. Pinang. From Dr. Cantor's Collection.
d. Young. East Indies. From the Collection of the East India Company.

57. **Arius cochinchinensis.**

D. 1/7. A. 16. P. 1/11.

The length of the head is contained thrice and two-thirds in the total (without caudal). Head slightly granulated above; occipital process rather broader than long, subtriangular, with the apex truncated, with a slight ridge along the middle, and with the lateral margins straight. The teeth on the palate are granular, forming two separate subovate, oblong patches, slightly convergent behind. The maxillary barbels extend to the end of the head, and are black. Dorsal spine rather slender, as long as the head without snout, serrated behind, and terminating in a long soft filament; adipose fin short, black. Pectoral fin much shorter than the head, with its spine rather stronger and shorter than that of the dorsal fin.





Cochinchina.

a. Seven and a half inches long: skin. Purchased.

58. **Arius microcephalus.**

Arius microcephalus, *Bleek. Nat. Tydschr. Nederl. Ind.* ix. p. 423, and *Prodr. Silur.* p. 77.
Pseudarius microcephalus, *Bleek. Atl. Ichth. Silur.* p. 37. tab. 51. fig. 1.

B. 5. D. 1/7. A. 19. P. 1/10.

The height of the body is contained four times and a third to four times and three-quarters in the total length (without caudal), the length of the head four times or four times and a fifth; head granulated above, broader than high, its greatest width being four-fifths or five-sixths of its length; occipital process scarcely longer than broad, subtriangular. The band of intermaxillary teeth is thrice as long as broad; teeth on the palate rather large, molar-like, forming two separate subovate patches. The maxillary barbels extend somewhat beyond the head. Dorsal fin higher than the body; its spine is strong, scarcely shorter than the head, and serrated along both edges; adipose fin nearly as long as dorsal. Pectorals scarcely shorter than the head; their spine is somewhat shorter than that of the dorsal fin. Adipose fin with a large black spot.

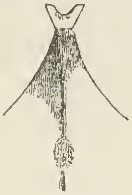
Bandjermasin.

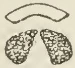
a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

β. American species.

59. Arius nuchalis.

D. 1/7. A. 21. P. 1/10.





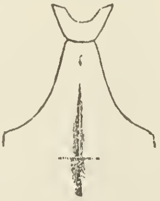
The height of the body is one-fifth of the total length (without caudal), the length of the head one-fourth. Head as broad as high, its greatest width being two-thirds of its length; its upper surface is granulated: the occipital process is triangular, as long as broad, with the lateral margins slightly concave; it is elevated into an obtuse ridge running along the middle; the longitudinal groove in the middle of the forehead is rather wide, narrow behind, and does not extend to the base of the occipital process. The teeth on the palate are coarsely granular, and form two subtriangular patches of moderate extent, which, sometimes, are subcontinuous with their anterior angles. The maxillary barbels extend nearly to the end of the pectoral. Dorsal spine of moderate strength, slightly serrated along both edges, five-sixths of the length of the head. Adipose fin small, shorter than the dorsal. Pectoral spine as long as, but stronger than, that of the dorsal. Pectoral fin shorter than the head.

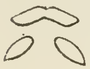
British Guiana.

a–c. Six inches long. Purchased of Mr. Scrivener.
d–f. Young. Presented by Sir R. Schomburgk.

60. Arius laticeps.

D. 1/7. A. 22. P. 1/10.





The height of the body is contained four times and two-thirds in the total length (without caudal), the length of the head four times. Head broader than high, its greatest width being three-fourths of its length; its upper surface is granulated: the occipital process is triangular, as long as broad, with concave lateral margins; its median ridge is scarcely elevated; the longitudinal groove in the middle of the forehead is narrow, tapering behind, and does not extend backwards to the base of the occipital process. The teeth on the palate are granular, and form two small, separate patches anteriorly on the palate. The maxillary barbels extend to the middle of the pectoral. Dorsal spine of moderate strength, serrated posteriorly, three-quarters of the length of the head. Adipose fin small, shorter than the dorsal. Pectoral spine shorter and stronger than that of the dorsal fin. Ventrals white.

British Guiana; Trinidad.

a. Five and a half inches long. British Guiana. Purchased of Mr. Scrivener.
b. Eight inches long. Trinidad. Presented by C. Taylor, Esq.

61. Arius melanopus.

D. 1/7. A. 21. P. 1/10.

This species is closely allied to *A. laticeps*, but has the fin-spines shorter.

The height of the body is contained five times in the total length (without caudal), the length of the head four times and a third; head somewhat broader than high, its greatest width being three-fourths of its length; the occiput and nape are finely granulated; occipital process subtriangular, as long as broad, with the lateral margins somewhat concave, and with the median ridge a little elevated. The longitudinal groove in the middle of the crown of the head is indistinct, narrow, linear behind, scarcely extending to the base of the occipital process. The teeth on the palate are obtusely conical, and form two rather small subovate patches, apart from each other, and situated on the front part of the palate. The maxillary barbels do not quite extend to the middle of the pectoral fin. Dorsal spine of moderate strength, scarcely serrated anteriorly, equal in length to the distance of the gill-opening from the anterior margin of the orbit, or even somewhat shorter. Adipose fin small, the length of its base being less than that of the dorsal. Pectoral spine nearly as long and strong as that of the dorsal fin, very strongly serrated interiorly. Porus axillaris nearly as wide as a nasal opening. The upper (inner) surface of the ventral fins deep black, the lower (outer) white. The inner surface of the pectorals blackish.

Rio Motagua.

a–b. From 8 to 9 inches long. From Mr. Salvin's Collection.

62. Arius arenatus.

Arius arenatus, *Cuv. & Val.* xv. p. 106.

B. 6. D. 1/6. A. 20. P. 1/9.

The distance between the end of the snout and that of the occipital process is contained thrice and a third in the total length (with the caudal); basal bone of the dorsal spine small. The teeth on the palate form two large ovate patches which touch each other anteriorly. The maxillary barbel extends to the middle of the pectoral fin. Adipose fin small. (*Val.*)

Cayenne.

The typical specimen, 7 inches long, is in the Leyden Museum.

63. Arius fissus.

? Pimelodus albidus, *Spix, Pisc. Bras.* tab. 7. fig. 1.
? Pimelodus spixii, *Agass. in Spix, Pisc. Bras.* p. 19.
? Arius spixii, *Cuv. & Val.* xv. p. 76.
Arius fissus, *Cuv. & Val.* xv. p. 107.

D. 1/7. A. 20–21.

The length of the head is one-third of the total (without caudal). The distance between the end of the snout and that of the occipital process is one-third of the total length (with the caudal); basal bone of the dorsal spine small. The teeth on the palate form two separate subovate patches. The maxillary barbel extends to, or nearly to, the middle of the pectoral fin. Adipose fin small.

Cayenne.

a–b. Presented by Professor R. Owen.

These specimens having had the cavity of the mouth and of the gills extended in an extraordinary manner, I was induced to examine the cause of it, when, to my great surprise, I found them filled with about twenty eggs, rather larger than an ordinary pea, perfectly uninjured, and with the embryos in a forward state of development.

The specimens are males, from 6 to 7 inches long, and in each the stomach was almost empty.

Although the eggs might have been put into the mouth of the fish by their captor, this does not appear probable. On the other hand, it is a well-known fact that the American Siluroids take care of their progeny in various ways; and I have no doubt that in this species and in its allies the males carry the eggs in their mouth, depositing them in places of safety, and removing them when they fear the approach of danger or disturbance.

64. **Arius variolosus.**

Arius variolosus, *Cuv. & Val.* xv. p. 107.

D. 1/6. A. 22–23.

The distance between the end of the snout and that of the occipital process is a little less than one-third of the total length (with the caudal); basal bone of the dorsal spine small. The teeth on the palate form two separate patches. The soft parts of the head with numerous small round grooves. The maxillary barbels extend to the end of the pectoral. Adipose fin small. (*Val.*)

Cayenne.

65. **Arius multiradiatus.**

Bagrus (?) arioides, *Kner, Sitzgsber. Akad. Wiss. Münch.* 1863, p. 227.

D. 1/7. A. 27.

The height of the body is contained five times and three-fourths in the total length (with the caudal), the length of the head four times. (*Kner.*)

Rio Bayano (Panama).

66. **Arius equestris.**

Arius equestris, *Baird & Girard, Proc. Ac. Nat. Sc. Philad.* 1855, p. 26, and *Ichth. U. S. & Mex. Bound.* p. 32. pl. 15.

D. 1/7. A. 16. P. 1/9

Maxillary barbels extending to the middle of the pectorals. The length of the head is contained four times and three-quarters in the

total (with the caudal). Adipose fin short; the pectorals extend to the vertical from the end of the dorsal. (*B. & G.*)
Indianola, Texas.

No description of the teeth of this species has been given, so that its position in the system is quite uncertain.

Appendix to ARIUS.

The two following species have been described by Sir J. Richardson from specimens which were in a very bad state of preservation, and which appear to have been destroyed since they were described. If the characters assigned to them be correct, they would form the types of one or two distinct genera; but as this is rather doubtful, we give merely an abstract of the original descriptions for the assistance of those who may rediscover them.

67. **Arius (?) venaticus.**

Bagrus venaticus, *Richards. Voy. Ereb. & Terr. Fish.* p. 33.

D. 1/9 or more. A. about 30. V. about 8.

Head strongly granulated above; apex of the occipital process, where it meets the small crescentic buckler of the dorsal fin, slightly rounded. Dorsal spine serrated anteriorly and a little undulated posteriorly; the pectoral spine is equal in length to the dorsal one, and is strongly serrated on both sides. The teeth are villiform. The front of the vomer supports two small roundish dental plates which adhere to each other. The palatine plates are both broader and longer. Barbels six. (*Richards.*)
North-west coast of Australia.

68. **Arius (?) vertagus.**

Bagrus vertagus, *Richards. Voy. Ereb. & Terr. Fish.* p. 33.

B. 6. D. $\frac{1}{6 \text{ or } 7}$. A. 28. V. 9?

The dorsal spine is equal in length to the space between its base and the orbit, and is shorter than the pectoral spine, which is strongly serrated on both sides. Head granulated above, with the occipital process crescentic at the apex. The vomerine teeth are disposed in two small separate plates, and the palatine teeth form a still smaller plate near each corner of the mouth. Barbels six. (*Richards.*)
North-west coast of Australia.

60. GALEICHTHYS.

Galeichthys, sp., *Cuv. & Val.*
Galeichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 90.

Adipose fin of moderate length; a short dorsal fin with a pungent spine and with seven soft rays; anal fin rather short. Head and nape entirely covered with soft skin; barbels six, four at the mandible. Teeth on the palate fixed; the upper jaw is the longer. Eyes with a free orbital margin. Caudal fin forked; ventral with six rays, inserted behind the vertical from the dorsal.

South Africa.

1. Galeichthys feliceps.

Galeichthys feliceps, *Cuv. & Val.* xv. p. 29. pl. 424.
Bagrus capensis, *Smith, Ill. Zool. S. Afr. Pisc.*; *Bleek. Nat. Tydschr. Nederl. Ind.* xxi. p. 76.

D. 1/7. A. 19. P. 1/10.

The length of the head is one-fourth of the total (without caudal); head thick, short, broad, obtuse, its greatest width being about four-fifths of its length. The teeth on the palate form a long transverse band, slightly interrupted in the middle. Six barbels: those of the maxillaries extend to the pectorals, those of the mandibles are shorter. The upper surface of the head is covered with soft skin; the occipital process and the basal bone of the dorsal spine become visible in dried specimens, and meet each other in the middle of the nape. Dorsal spine of moderate strength and length, smooth. Base of the adipose fin longer than that of the dorsal, but shorter than that of the anal. Pectoral spine strong, compressed, as long as the head without snout, obtusely serrated along its outer edge. Ventral fins much shorter than the pectorals, not extending on to the anal. Caudal forked, the upper lobe being the longer.

Cape of Good Hope.

a. Seventeen inches long: stuffed. From Sir A. Smith's Collection.

61. GENIDENS.

Genidens, *Casteln. Anim. nouv. ou rares Amér. Sud, Poiss.* p. 33.

Adipose fin rather short; dorsal fin short, with a pungent spine and with seven soft rays; anal fin short. Barbels six. Each jaw with a band of villiform teeth; teeth on the palate in two separate oblong patches, moveable, not adherent to the skull. Head granulated above. Caudal fin forked.

Brazils.

1. Genidens cuvieri.

Bagrus genidens, *Cuv. & Val.* xiv. p. 452. pl. 419.
Genidens cuvieri, *Casteln. l. c.* p. 33.
—— granulosus, *Casteln. l. c.* pl. 16. fig. 1 (bad).

D. 1/7. A. 19. P. 1/10.

The occipital process is triangular, longer than broad, with a prominent longitudinal ridge, joining the small crescent-shaped basal bone of the dorsal spine. Barbels of moderate length. The adipose fin is but little shorter than the dorsal.

Brazil.

a–b. From 7 to 8 inches long.

62. HEMIPIMELODUS*.

Hemipimelodus, *Bleek. Prodr. Silur.* p. 236.

Adipose fin of moderate length or short; a short dorsal fin with a pungent spine and with seven soft rays; anal fin moderately long. Head osseous above; barbels six. Nostrils very close together. Palate edentulous; teeth in the jaws villiform. Eyes below the skin. Caudal fin forked; ventral with six rays, inserted behind the vertical from the dorsal.

East Indies.

1. Hemipimelodus borneensis.

Pimelodus borneensis, *Bleek. Nat. Tydschr. Nederl. Ind.* ii. p. 430.
Hemipimelodus borneensis, *Bleek. Prodr. Silur.* p. 238, and *Atl. Ichth. Silur.* p. 43. tab. 82. fig. 3.

B. 5. D. 1/7. A. 18–20. P. $\frac{1}{9-10}$.

The length of the head is one-fourth or two-ninths of the total length (without caudal). The eyes are small, situated between the anterior and middle thirds of the head; their diameter is one-third of the width of the interorbital space. Head granulated above; the occipital process is keeled, triangular, longer than broad, extending on to the short basal bone of the dorsal spine. Mouth rather small, transverse. The maxillary barbels extend to the end of the head. Dorsal fin about as high as the body; its spine is strong, serrated behind, as long as, or shorter than, the head. Adipose fin rather longer than the dorsal, its length being more than half its distance from the dorsal. Pectoral spine strong, as long as that of the dorsal fin. Caudal fin forked, with pointed lobes.

Sumatra and Borneo.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

2. Hemipimelodus macrocephalus.

Bleeker, Prodr. Silur. p. 239, and *Atl. Ichth. Silur.* p. 43. tab. 82. fig. 2.

B. 5. D. 1/7. A. 19–20. P. 1/10.

The length of the head is contained thrice and a fourth or thrice and two-fifths in the total (without caudal); the eyes are small, situated between the anterior and middle thirds of the head, their diameter being one-half or two-fifths of the width of the interorbital space. Head granulated above; occipital process carinated, triangular, rather longer than broad, extending on to the small basal bone of the dorsal spine. The maxillary barbels reach to the opercles. Dorsal fin rather higher than the body; its spine is strong, serrated behind, two-thirds of the length of the head. Adipose fin scarcely longer than dorsal, its length being one-half of its distance from the dorsal. Pectoral spine as long as that of the dorsal fin; caudal forked. with pointed lobes.

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* 1. Nalla-jellah, *Russell*, pl. 170.—Pimelodus (?) nella, *C. & V.* xv. p. 162.—Coromandel.
2. Pimelodus manillensis, *C. & V.* xv. p. 192.—Manilla.

Borneo and Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

3. Hemipimelodus peronii.

Pimelodus peronii, *Cuv. & Val.* xv. p. 161.

B. 6. D. 1/7. A. 16. P. 1/11.

Head covered with soft skin, as broad as long, a little more than one-fifth of the total length (with the caudal); the eye is situated in the anterior third of the length of the head, of which it is one-fifth; interorbital space thrice as broad as the eye. The maxillary barbel extends scarcely beyond the end of the head. Dorsal and pectoral spines strong, obscurely serrated. Adipose fin as long as the anal, one-seventh of the total length. Caudal bilobed. (*Val.*)

India.

63. KETENGUS.

Ketengus, *Bleck. Verh. Bat. Gen.* xxi. *Silur.* p. 9.

Adipose fin short; dorsal short, with a pungent spine and with seven soft rays; anal of moderate length. Head osseous above; barbels six, small; nostrils very close together, the posterior with a valve. Palate edentulous; each jaw with a single series of closely-set, small, incisor-like, obtusely tricuspid or subtruncated teeth. Orbit with a circular eyelid. The gill-membranes are united, and entirely grown to the isthmus, having a free posterior margin without notch. Caudal fin forked; ventrals with six rays, inserted behind the vertical from the dorsal.

East Indian Archipelago.

1. Ketengus typus.

Ketengus typus, *Bleek. Verh. Bat. Genootsch.* xxi. *Silur.* p. 9; *Natuurk. Tydschr. Nederl. Ind.* i. p. 271; and *Atl. Ichth. Silur.* p. 44. tab. 82. fig. 1.

Pimelodus pectinidens, *Cant. Mal. Fish.* p. 261.

B. 5. D. 1/7. A. 20. P. $\frac{1}{7-8}$. V. 1/5.

Head large, very broad, with obtuse snout; cleft of the mouth very wide; the upper jaw is the longer. Dorsal spine not shorter than the head.

Pinang, Java, Madura, Sumatra, and Borneo.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

b. Young: skin. Pinang. From Dr. Cantor's Collection.

c–d. Half-grown. From the Haslar Collection.

64. ÆLURICHTHYS.

Galeichthys, sp., *Cuv. & Val.*

Ailurichthys, *Baird & Girard, Proc. Acad. Nat. Sc. Philad.* vii. p. 26.

Adipose fin short; a short dorsal fin with a pungent spine and with seven soft rays; dorsal and pectoral spines produced into a long, compressed and striated filament; anal fin of moderate length. Barbels four: one at each maxillary, band-like, and two at the chin. Teeth on the palate villiform, in a crescentic band. Jaws nearly equal in length. Caudal forked; ventral rays six. A short slit between the gill-membranes.

Eastern parts of America.

a. Occipital process subtriangular, tapering behind.

1. **Ælurichthys longispinis.**

D. 1/7. A. 21. P. 1/12.

Very similar to *Æ. marinus* and *gronovii*.

The maxillary barbels extend to, or nearly to, the root of the ventral. The teeth on the palate in a narrow band, composed of two vomerine and of the palatine portions; very narrow interspaces between the single portions The upper jaw is rather the longer. Pectoral spine much longer than that of the dorsal fin, and as long as the head; both spines with the soft filaments of variable length. Back olive, sides silvery.

Mexico.

a. Eighteen inches long. Old Collection.
b. Fine specimen. South America.
c. Half-grown. Mexico. From the Haslar Collection.

2. **Ælurichthys marinus.**

Silurus bagre, *Bl.* taf. 365; *Bl. Schn.* p. 377 (not *L.*).
—— marinus, *Mitch. Lit. & Phil. Trans. New York*, i. p. 433.
Galeichthys parræ, *Cuv. & Val.* xv. p. 33; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17.
—— blochii, *Cuv. & Val.* xv. p. 44.
—— marinus, *Dekay, New York Faun. Fish.* p. 178. pl. 37. fig. 118 (bad).
—— bahiensis, *Casteln. Anim. Amér. Sud, Poiss.* p. 37. pl. 18. fig. 1 (miserable description).
Ailurichthys marinus, *Girard, Ichth. U. S. & Mex. Bound.* pl. 14.

B. 6. D. 1/7. A. 22–24. P. 1/12. Vert. 20/30.

The maxillary barbels extend to, or somewhat beyond, the end of the pectoral spine. Pectoral spine longer than that of the dorsal fin, three-fifths or three-quarters of the length of the head. The band of teeth on the palate is subcontinuous.

Atlantic coasts of America.

a, b. Adult. North America. Purchased of Mr. Warwick.
c. Adult: stuffed. North America. Presented by E. Doubleday, Esq.
d. Young.

3. **Ælurichthys gronovii.**

Marcgr. p. 174; *Pison.* p. 64; *Willugh.* pl. H. 7. fig. 6; *Parra*, pl. 31. fig. 1.
Mystus, *Gronov. Zoophyl.* no. 383. p. 124.

Silurus bagre, *L. Syst. Nat.* p. 505.
Galeichthys gronovii, *Cuv. & Val.* xv. p. 40; *Kner, Sitzgsber. Wien. Acad.* xxvi. p. 392. fig. 8 (air-bladder).
—— eydouxii, *Cuv. & Val.* xv. p. 43.
Bagrus macronemus, *Ranzani, in Nov. Comm. Acad. Sc. Inst. Bonon.* 1842, v. p. 334. tab. 28.
Mystus carolinensis, *Gronov. Syst. ed. Gray*, p. 156.

B. 6. D. 1/7. A. 29–32. P. 1/12.

The maxillary barbels extend to, or beyond, the anal. Pectoral and dorsal spines of nearly equal length, shorter than the head. The teeth on the palate form a band, which is slightly interrupted in the middle and on each side of the vomer.

Tropical America.

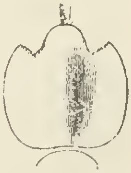
a. Half-grown. Demerara. Presented by Dr. Hancock as *Pimelodus bueru*.
b. Half-grown. South America. Presented by Sir R. Schomburgk.
c–d. Half-grown and young. West Indies. Purchased of Mr. Scrivener.
e–f. Half-grown: stuffed. West Indies. Purchased of Mr. Scrivener.
g. Adult. Purchased of Mr. Frank.
h. Half-grown.

β. A large subquadrangular buckler on the nape.

4. **Ælurichthys nuchalis.**

D. 1/7. A. 26. P. 1/12.

The height of the body is rather less than the length of the head, which is two-ninths of the total (without caudal); the greatest width of the head is three-fourths of its length; snout longer than the eye, the diameter of which is rather less than one-fourth of the length of the head. The vomerine band of teeth is separated in the middle by a short interspace, each half being as broad and long as the palatine band with which it is subcontinuous. The maxillary barbels extend to the root of the ventral, those of the mandible nearly to the pectoral. The dorsal buckler is as broad behind as in front, with rounded lateral margins, each half being bent downwards on the side. Dorsal fin narrow and elevated, the first ray being considerably longer than the spine, which is as long as the head without snout; pectoral spine equal to the dorsal spine. The origin of the anal fin is much nearer to the base of the caudal than to that of the pectoral. The first pectoral ray is produced into a long filament reaching beyond the origin of the anal. Ventrals extending beyond the vent, their length being three-fifths of that of the head. Iridescent blue above, silvery below.



Pacific coast of Panama.

a. Fine specimen, 11 inches long. From the Collection of Messrs. Godman and Salvin.

This species is perhaps closely allied to *Ælurichthys panamensis*, Gill, Proc. Acad. Nat. Sc. Philad. 1863, p. 172, but that author describes his species as having the head longer, the ventral fins shorter, and the anal placed more forwards. Besides, the shape of the dorsal buckler in our species is so different from that of the other *Ælurichthyes*, that probably he would have made it the type of one of his new generic names, if he had had the same species, or one closely allied to it.

65. PARADIPLOMYSTAX.

Paradiplomystes, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 92.

Adipose fin short; a short dorsal fin with a pungent spine and with seven soft rays; anal rather short. Barbels two: one to each maxillary, of moderate length, band-like. Bands of small teeth in the jaws and on the palate. Caudal forked.

Brazil.

1. Paradiplomystax coruscans.

Pimelodes coruscans, *Licht.*, *Wiedem. Zool. Mag.* i. pars 3. p. 58.

B. 7. D. 1/7. A. 13. P. 1/8.

Nuchal shield keeled. The maxillary barbels extend nearly to the middle of the body. The upper jaw is a little longer than the lower. Cleft of the mouth wide; eye immediately above the angle of the mouth. (*Licht.*)

Brazil.

I have not seen this species, which, to judge from the description, must be closely allied to *Ælurichthys*.

66. DIPLOMYSTAX.

Diplomyste, sp., *Duméril, Ichth. Analyt.* p. 487.
Diplomystes, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 92.

Adipose fin rather elongate; a short dorsal fin with a pungent spine and with seven soft rays; anal fin rather short. Barbels two, short, fleshy, belonging to the maxillaries. Lips fleshy, covered with papillæ, the upper prominent. Bands of villiform teeth in the intermaxillary, *maxillary*, and in the lower jaw; two groups of small obtuse teeth on the vomer. Caudal forked; ventral fins with six rays, inserted below the end of the dorsal. Gill-openings wide, subcontinuous

Chile.

1. Diplomystax papillosus.

Arius papillosus, *Cuv. & Val.* xv. p. 118. pl. 431; *Gay, Hist. Chil. Zool. Fish.* p. 305.

B. 8. D. 1/7. A. 12–13. P. 1/9. Vert. 14/25.

The entire head covered with soft skin; dorsal spine not serrated. The teeth form a broad band on the intermaxillary, and a narrow one on the maxillary.

Rivers of Valparaiso and San Jago.

a. Chile.

67. OSTEOGENIOSUS.

Osteogeneiosus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Batav.* p. 49.

Adipose fin short; a short dorsal fin with a pungent spine and with seven soft rays; anal fin rather short. Barbels two, belonging to the maxillaries, very stiff, bony. The upper jaw is the longer. Teeth on the palate obtusely conical, in two separate patches. Gill-membranes united at the throat, emarginate. Caudal forked; ventral rays six.

East Indies.

1. Osteogeniosus militaris.

Silurus militaris, *L. Syst. Nat.* i. p. 503.
Arius militaris, *Cuv. & Val.* xv. p. 114. pl. 430; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17.
Osteogeneiosus cantoris, *Bleek. Verh. Bat. Gen.* xxv. *Beng. & Hind.* p. 120.

D. 1/7. A. 20–23. P. 1/10–11. Vert. 18/29.

The height of the body is contained from six times to six times and three-fourths in the total length (with the caudal), the length of the head four times and a half or four times and two-thirds; head distinctly granular above, broader than high, its depth being two-thirds of its length. The diameter of the eye is one-fourth of the width of the interorbital space, which is more than one-half of the length of the head. Occipital process not quite thrice as long as broad. The maxillary barbels extend beyond the end of the head.

East Indian continent.

a, *b–c*. Half-grown. Ganges. Presented by G. R. Waterhouse, Esq.
d. Half-grown. From Dr. v. Bleeker's Collection.—Type of *O. cantoris*.
d. Young. From the Haslar Collection.

2. Osteogeniosus valenciennesii.

Osteogeneiosus valenciennesii, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 51; *Prodr. Silur.* p. 121; and *Atl. Ichth. Silur.* p. 46. tab. 63.
—— gracilis, *Bleek. Verh. Bat. Gen. l. c.*
—— blochii, *Bleek. l. c.*
Arius militaris, *Cant. Mal. Fish.* p. 259.

B. 5. D. 1/7. A. 20–22. P. 1/9–10.

The height of the body is contained from six times and a quarter to six times and three-quarters in the total length (with the caudal), the length of the head from four times and a third to four times and five-sixths; head scarcely granulated above, broader than high, its depth being a little more than one-half of its length. The diameter of the eye is one-third or two-sevenths of the width of the interorbital space, which is rather less than one-half of the length of the head. Occipital process not quite thrice as long as broad. The maxillary barbels extend to or beyond the root of the pectoral.

Rivers of Java and Banka; Pinang.

a. One of the typical specimens From Dr. P. v. Bleeker's Collection.
b. Adult: skin. Pinang. From Dr. Cantor's Collection as *Arius militaris*.

3. Osteogeniosus macrocephalus.

Osteogeneiosus macrocephalus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 49; *Prodr. Silur.* p. 124; and *Atl. Ichth. Silur.* p. 47. tab. 64.
—— longiceps, *Bleek. Verh. Bat. Gen.* xxi. *l. c.* p. 50.
—— ingluvies, *Bleek. l. c.*

D. 1/7. A. 19–21. P. $\frac{1}{9-10}$.

The height of the body is contained six times and a half or seven times and a half in the total length (with the caudal), the length of the head four times. Head scarcely granulated above, broader than high, its depth being one-half of its length. The diameter of the eye is two-fifths of the width of the interorbital space. Occipital process thrice as long as broad. The maxillary barbels extend to the root of the pectoral.

Rivers of Java and Madura.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.

68. BATRACHOCEPHALUS*.

Batrachocephalus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 52.

Adipose fin short; a short dorsal fin with a pungent spine and with seven soft rays; anal fin short. Barbels two, rudimentary, inserted at the chin; no maxillary barbels. The lower jaw is the longer; cleft of the mouth wide. All the teeth obtusely conical, in two concentric bands in each of the jaws; none on the vomer; a broad longitudinal band on each palatine bone. Eyes with a free orbital margin. Gill-membranes united at the throat, without notch. Caudal forked; ventral rays six.

East Indies.

1. Batrachocephalus mino.

Ageneiosus mino, *Ham. Buch.* pp. 158, 375.
Batrachocephalus ageneiosus, *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 52.
—— micropogon, *Bleek. l. c.*; *Prodr. Silur.* p. 118; and *Atl. Ichth. Silur.* p. 48. tab. 65. fig. 1.

D. 1/7. A. 19. P. 1/9.

The cleft of the mouth extends to behind the centre of the orbit. Occipital process much longer than broad at its base; basal bone of the dorsal spine crescent-shaped, narrow. Dorsal and pectoral spines serrated; adipose fin shorter than dorsal.

Ganges; rivers of Java and Sumatra.

a. Fine specimen. Purchased of Mr. Frank.

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* 1. Galeichthys stanneus, *Richards. Ichth. Chin.* p. 284, may well be erased from the ichthyological system; on examining the figure to which that name has been given, we see that it was taken from a fish evidently very similar to *B. mino*, but with longer chin-barbels. The parts of the mouth are entirely misrepresented, the lines originally indicating the lateral cleft of the mouth having been afterwards (probably by the colourer) altered into a maxillary barbel! The figure in its present state reminds us of the South-American *Asterophysus*.

Ninth Group. BAGARINA.

Proteropterous Siluroids with the anterior and posterior nostrils placed close together, and with a barbel between them.

East Indies.

69. BAGARIUS.

Bagarius, *Bleek. Verh. Bat. Gen.* xxv. *Beng. & Hind.* p. 121.

Adipose fin rather short; a short dorsal with one spine and six rays; anal fin of moderate length. Barbels eight. The upper jaw is the longer; teeth in the jaws cardiform, unequal in size; palate edentulous. Head naked above. Caudal fin deeply forked; ventral rays six. Thorax without longitudinal plaits of the skin.

East Indies.

1. Bagarius yarrellii.

Pimelodus bagarius, *Ham. Buch.* pp. 186, 378. pl. 7. fig. 62; *Cuv. & Val.* xv. p. 146. pl. 433; *Bleek. Verh. Bat. Gen.* xxi. *Silur. Bat.* p. 10.
Bagrus yarrellii, *Sykes, Trans. Zool. Soc.* ii. p. 370. tab. 65. fig. 1.
Bagarius buchanani, *Bleek. Verh. Bat. Gen.* xxv. *Beng. & Hind.* p. 121; *Prodr. Silur.* p. 212; and *Atl. Ichth. Silur.* p. 61. tab. 81.

B. 12. D. 1/6. A. 15. P. 1/12.

Head depressed, with the snout produced and with the upper jaw projecting; eyes small. The band of teeth in the upper jaw narrowest in the middle. The maxillary barbel broad at the base, scarcely extending beyond the end of the head; dorsal and pectoral spines and the caudal lobes produced into long filaments. Body with broad irregular brown cross-bands.

Dekkan; Madras; Ganges; Java.

a–k. Adult ($5\frac{1}{2}$ feet long), half-grown, and young: stuffed. Ganges.
l. Young. Madras Presidency. Presented by Captain J. Mitchell.

70. EUCLYPTOSTERNUM.

Aclyptosternon, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 103.

An adipose fin of moderate length; a short dorsal fin with a pungent spine and with six soft rays; anal fin short. Barbels eight. Teeth on the palate villiform, in two separate patches. The upper jaw is the longer. Eyes small, below the skin. Caudal forked; ventral rays six. Pectorals horizontal, with a thoracic adhesive apparatus between, which is formed by longitudinal plaits of the skin.

Syria.

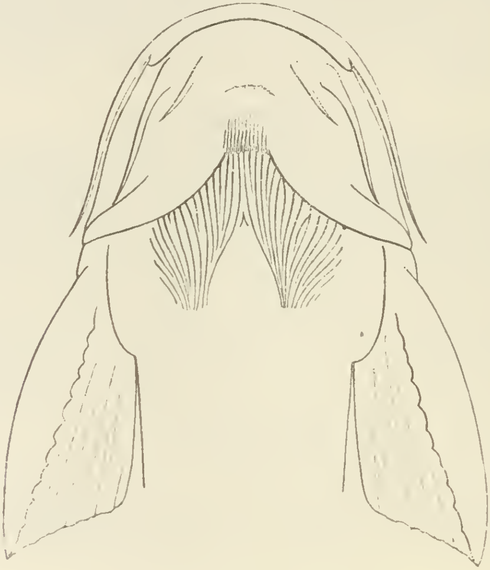
The adhesive apparatus of the thorax has been denied by Bleeker; it is very distinct in our specimen, which is the type; therefore we have been compelled slightly to alter the name proposed by Bleeker, as it conveys an erroneous idea of the character of the fish.

1. Euclyptosternum coum.

Russell, Nat. Hist. Alepp. p. 76. pl. 13. fig. 2; *Gronov. Zoophyl.* p. 126. no. 387. pl. 8*a*. fig. 7.
Silurus cous, *L. Syst. Nat.* i. p. 504; *Bl. Schn.* p. 387.
Pimelodus cous, *Cuv. & Val.* xv. p. 140.

D. 1/6. A. 11. V. 6.

Head rather broad, depressed, with the snout elongate, and with the upper jaw projecting beyond the lower. Eye very small, situated behind the middle of the length of the head, directed upwards. The upper surface of the head covered with smooth skin. Nostrils rounded, close together, with a barbel between, which is one-third of the length of the head; maxillary barbels broad at the base, shorter than the head; a small elliptic patch of teeth on each side of the palate, shorter than the space between the two patches. Dorsal spine stout, not serrated, not quite half as long as the head. Pectoral spine very strong, with recurved spines along its inner edge, more than half as long as the head. Adipose fin longer than the dorsal.



River Coic.

a. Ten inches long. One of the typical specimens from Russell's Collection.

A skeleton in Hyrtl's Collection, named *Arius cous*, has 16 abdominal and 22 caudal vertebræ (Denkschr. Acad. Wiss. Wien, xvi. 1859, p. 17).

71. GLYPTOSTERNUM*.

Glyptosternon, sp., *M'Clell. Calc. Journ. Nat. Hist.* ii. p. 584.
Glyptosternum et Glyptothorax, *Blyth, Journ. As. Soc. Beng.* xxix. p. 154.

Adipose fin rather short; a short dorsal with one spine and with six rays; anal fin rather short. Barbels eight, those of the maxillaries very broad at their base. Mouth inferior; teeth villiform, palate edentulous. Head depressed, covered with soft skin above; eyes small, superior. Gill-opening wide; gill-membranes separated by an isthmus. Caudal fin forked: pectorals horizontal, with a thoracic adhesive apparatus between, which is formed by longitudinal plaits of the skin, and rather indistinct in old individuals; ventrals with six rays.

East Indies. Small Siluroids inhabiting mountain-streams.

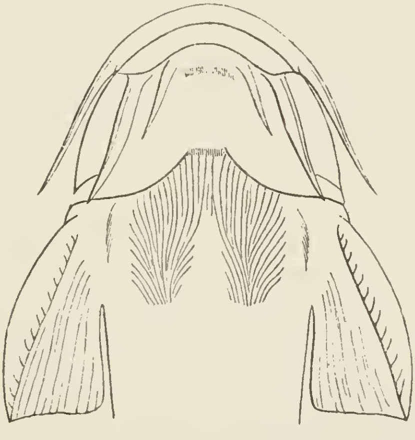
a. Ventral and pectoral rays not plaited below.

1. Glyptosternum trilineatum.

? Glyptothorax trilineatus, *Blyth, Journ. As. Soc. Beng.* 1861, xxix. p. 154.

D. 1/6. A. 13. P. 1/10. V. 6.

Head a little longer than broad, its length being contained four times and two-thirds in the total (without caudal). Eyes behind the middle of the length of the head; occipital process thrice as long as broad. Lips not fringed; the maxillary barbels extend to the end of the head. The free portion of the tail is nearly thrice as long as high. Dorsal spine rather slender, the length of its bony portion being one-half, or less than one-half, of that of the head. Adipose fin longer than dorsal, its length being less than one-half of its dis-



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* 1. Pimelodus telchitta, *Ham. Buch.* pp. 185, 378.—The unpublished drawing shows 11 anal rays, and all the barbels shorter than the head.

tance from the dorsal. Pectoral spine broad, strongly toothed; pectoral fin terminating at a considerable distance from the ventral. Caudal deeply forked. Greyish brown, a light streak along the vertebral line and along each lateral line.

Nepal. (Tenasserim?)

a, b–e. Adult (12 inches long). Nepal. Presented by B. H. Hodgson, Esq.

2. **Glyptosternum gracile.**

D. 1/6. A. 14. P. 1/10. V. 6.

Head rather longer than broad, its length being two-ninths of the total (without caudal). Eyes behind the middle of the length of the head; occipital process narrow, slender, nearly four times as broad as long. Lips not fringed; the maxillary barbels extend nearly to the middle of the pectoral. The free portion of the tail is twice as long as high. Dorsal fin pointed, much higher than the body; dorsal and pectoral spines not enveloped in skin; the former is rather strong, serrated behind, four-fifths of the length of the head. Adipose fin longer than dorsal, its length being more than one-half of its distance from the dorsal. Caudal fin deeply forked, with the lobes pointed, the lower being the longer, two-ninths of the total length. Anal fin somewhat pointed. The pectoral fin extends nearly to the root of the ventral; its spine is exceedingly broad, and armed with about ten recurved osseous spines. Brownish; fins light-coloured.

Nepal.

a. Five inches long. Presented by B. H. Hodgson, Esq.

3. **Glyptosternum platypogonoides.**

Pimelodus platypogonides, *Bleek. Nat. Tydschr. Nederl. Ind.* ix. p. 272.
Glyptosternon platypogonides, *Bleek. Prodr. Silur.* p. 219.
Glyptothorax platypogonides, *Bleek. Atl. Ichth. Silur.* p. 63. tab. 83. fig. 3.

B. 8–9. D. 1/6. A. 12–13. P. 1/9. V. 6.

The length of the head is contained four times and a fourth or four times and a third in the total (without caudal); its width is once and a fourth or once and a fifth in its length. Eyes in the middle of the length of the head; occipital process thrice as long as broad. Lips not fringed; the maxillary barbels extend to the base of the pectorals. The free portion of the tail is more than twice as long as high. Dorsal spine three-fourths of the length of the head, generally slightly serrated behind. Adipose fin longer than dorsal, its length being more than one-half of its distance from the dorsal. Pectoral spine broad, provided with large spinous teeth interiorly; caudal fin deeply forked. Greenish violet, with blue dots; lateral line yellow; dorsal and anal fins with a broad band along the base and along their outer portion; adipose fin and caudal dotted with brown.

Sumatra.

a. Type of the species. From Dr. P. v. Bleeker's Collection.

4. Glyptosternum lonah.

Bagrus lonah, *Sykes, in Trans. Zool. Soc.* ii. p. 371.

D. 1/6. A. 12. P. 1/9. V. 6.

Head as long as broad, covered with thin skin above, two-ninths of the total length (without caudal). Eyes somewhat behind the middle of the length of the head; occipital process four times as long as broad. Lips not fringed; the maxillary barbels extend to the end of the head. The free portion of the tail is twice as long as high. Dorsal fin higher than the body, with the spine rather slender, enveloped in skin, and not quite half as long as the head. Adipose fin longer than the dorsal, and half as long as its distance from the dorsal. Caudal fin forked. The pectoral fin terminates at a considerable distance from the ventral; pectoral spine moderately broad, with a fine outer and with a strong inner serrature.

Dekkan.

a. Type of the species, 6 inches long. From the Collection of Colonel Sykes.

5. Glyptosternum dekkanense.

D. 1/6. A. 11. P. 1/9. V. 6.

Head rather longer than broad, its length being two-ninths of the total (without caudal). Eyes somewhat behind the middle of the length of the head; occipital process four times as long as broad. Lips not fringed; the maxillary barbels extend to the end of the head. The free portion of the tail is two-thirds as high as long. Dorsal fin as high as the body, with the spine rather slender, enveloped in skin, and half as long as the head. Adipose fin longer than dorsal, and half as long as its distance from the dorsal. Caudal fin forked, its length being contained five times and a half in the total. The pectoral fin terminates at a considerable distance from the ventral; its spine is very broad, and strongly serrated interiorly.

Dekkan.

a. Three and a half inches long. From the Collection of Colonel Sykes.

6. Glyptosternum platypogon.

Pimelodus platypogon, (*K. & v. H.*) *Cuv. & Val.* xv. p. 152; *Valenc. in Jacquem. Voy. Ind. Poiss.* pl. 18. fig. 3; *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 591.
—— cyanochlorus, *Bleek. Verh. Bat. Gen.* xxi. *Silur.* p. 11.
Glyptosternon platypogon, *Bleek. Prodr. Silur.* p. 217.
Glyptothorax platypogon, *Bleek. Atl. Ichth. Silur.* p. 63. tab. 83. fig. 2.

B. 8–9. D. 1/6. A. 11–12. P. $\frac{1}{7\text{–}10}$. V. 6.

The length of the head is contained thrice and two-fifths or four times and a third in the total (without caudal); eyes in the middle of the length of the head; occipital process about twice as long as broad; lips not fringed; the maxillary barbel extends to the base of the pectoral; the free portion of the tail is scarcely longer than high.

Dorsal spine two-thirds or three-fourths of the length of the head, generally slightly denticulated behind. Adipose fin longer than dorsal, its length being more than one-half of its distance from the dorsal. Pectoral spine broad, provided with large spinous teeth interiorly; caudal fin deeply emarginate. Brownish above.

Java and Sumatra.

a. One of the typical specimens. From Dr. P. v. Bleeker's Collection.
b. Java. Purchased of Mr. Frank.

β. The outer ventral and pectoral rays transversely plaited below.

7. **Glyptosternum striatum.**

M'Clell. Calc. Journ. Nat. Hist. ii. p. 587. tab. 6 (upper figs.).

D. 1/6. A. 11. P. 1/11. V. 6.

Head nearly as broad as long, its length being one-fifth of the total (without caudal). Eyes in the middle of the length of the head; occipital process thrice as long as broad. Lips not fringed; the maxillary barbels extend beyond the root of the pectorals. The free portion of the tail is twice as long as high. Dorsal fin higher than the body, obtusely pointed above; its spine is slender. enveloped in skin, half as long as the head. Adipose fin much longer than dorsal, its length being two-thirds of its distance from the dorsal. Caudal fin deeply forked, with the lobes pointed, the lower lobe being the longer, one-fifth of the total length. The outer rays of the pectoral and ventral fins are very broad, cartilaginous, provided with numerous obliquely transverse folds underneath, of a similar structure to those on the thorax. The pectorals terminate at some distance from the ventrals. Uniform brownish.

Assam; Khasya.

a. Three and a half inches long. Khasya. From the Collection of the East India Company.—One of the typical specimens from Mr. Griffith's Collection.
b. Three and a half inches long. Assam. From the Collection of the East India Company.

M'Clelland, in describing his *Glyptosternon reticulatus* from Afghanistan (Calc. Journ. Nat. Hist. ii. p. 584), appears to have had a species very similar to *Gl. striatum*.

8. **Glyptosternum pectinopterum.**

M'Clell. Calc. Journ. Nat. Hist. ii. p. 587.

A. 7. P. 9. The dorsal spine with a row of sharp points along its anterior margin; the outer pectoral and ventral rays broad, transversely plaited below. (*M'Cl.*)

Simla.

The two following genera are very insufficiently known, and therefore their position in the system is extremely doubtful.

HARA.

Hara, *Blyth, Journ. As. Soc. Beng.* xxix. p. 152.

Adipose fin of moderate length; a short dorsal fin with a pungent spine; anal fin short, with less than 20 rays. Barbels eight, those of the maxillaries being dilated in their basal half. Teeth on the palate villiform, in a band. Eyes small, without free orbital margin, below the skin. Caudal fin forked; ventrals with six rays.

East Indian continent.

1. **Hara aspera.**

Pimelodus asperus, *M'Clell. Calc. Journ. Nat. Hist.* iv. p. 404. tab. 24. fig. 2.

D. 1/6. A. 8 (?). P. 1/6.

Habit stout. Head osseous above, the occipital region with three parallel bony processes. Maxillary barbels rather longer than the head. Cleft of the mouth below the snout. Dorsal and pectoral spines very strong, strongly serrated. Caudal forked. Body and fins transversely variegated with brown and white; barbels annulated. (*M'Cl.*)

Chusan.

2. **Hara buchanani.**

Pimelodus hara, *Ham. Buch.* pp. 190, 378.
Hara buchanani, *Blyth, l. c.*

D. 1/6. A. 10. P. 1/7.

Habit rather stout. Head osseous above, the occipital region with three parallel bony processes. Maxillary barbels longer than the head. Cleft of the mouth below the snout; eyes directed upwards. Dorsal and pectoral spines of moderate strength, serrated; caudal forked. Brown, marbled with black; nasal and maxillary barbels annulated with black. (*H. B.*)

River Kosi. Three inches long.

Hara filamentosa (Blyth, l. c.), from Tenasserim, is said to be "very like *H. buchanani*, but having a long filament continued from the upper segment of the caudal fin"

3. **Hara conta.**

Pimelodus conta, *Ham. Buch.* pp. 191, 379.

D. 1/4. A. 10. P. 1/7.

Habit slender. Head osseous above, the occipital region with three parallel bony processes. Barbels shorter than the head. Cleft of the mouth below the snout; eyes directed upwards. Dorsal and pectoral spines strong, serrated along both edges. The upper caudal lobe prolonged. Brown: fins spotted; maxillary barbels annulated with black. (*H. B.*)

River Mahananda. Five inches long.

AMBLYCEPS*.

Amblyceps, *Blyth, Journ. As. Soc. Beng.* xxvii. p. 281.

Adipose fin short and low; a short dorsal fin with a concealed pungent spine and with six soft rays; anal fin short. Barbels eight. Teeth villiform; palate edentulous. Head covered with soft skin above; eyes very small. Lateral line none? Caudal forked; no thoracic adhesive apparatus; ventrals with six rays, inserted behind the end of the dorsal fin.

Small Siluroids from the East Indian continent.

1. Amblyceps cæcutiens.

Blyth, Journ. As. Soc. Beng. xxvii. p. 282.

D. 1/6. A. 6 (?). P. $\frac{1}{2\text{–}3\,(?)}$.

Barbels large, those of the maxillaries reaching to the tip of the pectoral fin, and the exterior lower one nearly as long. (*Blyth.*)

Three inches long. Moulmein.

2. Amblyceps tenuispinis.

Blyth, Journ. As. Soc. Beng. xxix. p. 153.

D. 1/6. A. 9.

Dorsal and pectoral spines short and slender; barbels thin; eyes minute; adipose fin indistinct and pointed posteriorly; lateral line none. Olive-brown. (*Blyth.*)

Two inches long. Gházipur.

3. Amblyceps mangois.

Pimelodus mangois, *Ham. Buch.* pp. 199, 379.

D. 1/6. A. 8. P. 1/7.

The lower jaw is rather prominent; barbels well developed, not dilated, those of the maxillaries extending beyond the extremity of the pectorals, the outer ones of the mandible beyond its root. Lateral line none. Tail behind nearly as high as the body; adipose fin much shorter than the dorsal; caudal deeply forked, its upper lobe being the longer, two-sevenths of the total length. Uniform brown.

Northern Behar.

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[*] 1. Pimelodus anisurus, *M'Clell. Calc. Journ. Nat. Hist.* ii. p. 583.—Loodianah and Cabul River.
2. —— indicus, *M'Clell. l. c.* p. 584.—Loodianah.

Fifth Subfamily.
SILURIDÆ STENOBRANCHIÆ.

The rayed dorsal fin is short, if present, belonging to the abdominal portion of the vertebral column, the ventrals being inserted behind it (except in *Rhinoglanis*). The gill-membranes are confluent with the skin of the isthmus.

Tenth Group. DORADINA.

The anterior and posterior nostrils are remote from each other. Rayed dorsal fin present.

South America and Africa.

72. AGENIOSUS*.

Ageneiosus, *Lacép.* v. p. 132; *Cuv. & Val.* xv. p. 231.
Ceratorhynchus, *Agass. Oss. Foss.*
Ageneiosus et Pseudageneiosus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 108.

Adipose fin very short; dorsal short, with seven rays, the first of which is more or less spinous; anal long. Teeth villiform, in bands; palate edentulous. The upper jaw is the longer. Barbels two, at the maxillaries. Eyes behind the angle of the mouth, of moderate size, covered by the skin of the head. Gill-opening of moderate width. Ventrals with seven rays, inserted behind the dorsal.

South America.

1. Ageniosus militaris.

Silurus militaris, *Bl.* taf. 362; *Bl. Schn.* p. 375 (not *L.*).
Ageneiosus militaris, *Valenc. in d'Orb. Voy. Amér. Sud, Poiss.* pl. 4. fig. 1; *Cuv. & Val.* xv. p. 232; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 437.

B. 11. D. 1/6. A. 36. P. 1/13. V. 7. Vert. 15/30.

The length of the head is a little less than one-fourth of the total (without caudal); head covered with thin skin above; snout much depressed, spatulate, with the upper jaw longest. The maxillaries do not terminate in a soft barbel, but they are modified into an erectile, bony, spiny weapon which can be received into a groove, and reaches somewhat behind the angle of the mouth. Pectoral spine half as long as the head, slender, slightly serrated behind; the dorsal spine is longer and stronger than that of the pectoral, and serrated along both edges. Caudal forked. Rose-coloured, marbled with blackish.

Rio de la Plata; Cujaba.

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* 1. Hypothalmus davalla, *Schomb. Fish. Brit. Guian.* p. 191. pl. 9 (very bad)

2. Ageniosus sebæ.

Seba, iii. 29. 8.
Ageneiosus inermis, *Cuv. & Val.* xv. p. 240. pl. 440 (not Silurus inermis, *Bl.*).

B. 11. D. 1/6. A. 38. P. 1/15. V. 7.

The length of the head is contained thrice and a third in the total (with the caudal). Barbels very thin, extending on to the eye. Dorsal and pectoral spines very slender, not serrated, rather stiff. The pectoral fin terminates at some distance from the ventral *. (*Val.*)

Surinam.

3. Ageniosus brevifilis.

Cuv. & Val. xv. p. 242; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 438.

B. 11. D. 1/6. A. 34–36. P. 1/14. V. 7.

The length of the head is contained thrice and a third (young) or thrice and two-thirds (adult) in the total (without caudal); head covered with soft skin above. Two barbels, belonging to the maxillary, not fringed, hidden in a groove. Dorsal spine very slender, pectoral spine flexible. Caudal fin obliquely truncated. The pectoral extends to the ventral, the ventral to the anal. Fins with brown spots; in young specimens the body also is brown-spotted.

Cayenne; Brazil.

a, *b–c*. Adult, half-grown, and young. River Capin, Para. Purchased of Mr. Stevens.
d. Adult.

4. Ageniosus dentatus.

? Silurus inermis, *Bloch*, t. 366.
? Ageneiosus inermis, *Lacép.* v. pp. 132, 134.
Ageneiosus dentatus, *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 441.

D. 1/6. A. 40. P. 1/13. V. 7.

The length of the head is one-fourth of the total (without caudal); occipital process naked. Two very short barbels, not fringed. Dorsal spine very slender, crenulated in front; pectoral spine flexible. Caudal fin deeply forked. The pectoral does not extend on to the ventral; the latter reaches beyond the origin of the anal. Brownish above, whitish on the sides and belly.

Surinam; Brazil.

a, *b*. Adult and half-grown. Para.

73. TETRANEMATICHTHYS.

Tetranematichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 108.

Adipose fin very short; dorsal short, with a pungent spine and six soft rays; anal long. Teeth villiform, in bands; palate edentulous.

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* The adipose fin (according to the figure) is situated above the anterior half of the anal fin.

Barbels four, very small: two at the mandible. Eyes behind the angle of the mouth, of moderate size, covered by the skin of the head. Ventrals with seven rays, inserted behind the dorsal.

Brazil.

1. **Tetranematichthys quadrifilis.**

Ageneiosus quadrifilis, *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 442. fig. 29.

D. 1/6. A. 41. P. 1/10. V. 7.

The length of the head is one-fourth of the total (with the caudal); head granulated above. The upper jaw is scarcely longer than the lower; maxillary barbels very thin, shorter than those of the mandible, which are below the angle of the mouth and extend on to the eye. Dorsal spine feeble, not serrated, longer than that of the pectoral fin, which is slightly serrated along both edges. The pectorals extend to the root of the ventrals, the ventrals beyond the origin of the anal. (*Kner.*)

Rio Guaporé.

74. EUANEMUS.

Euanemus, *Müll. & Trosch. Hor. Ichth.* iii. p. 11.

Adipose fin very short; dorsal short, with a pungent spine and with six soft rays; anal long. Barbels six, cylindrical: one to each maxillary, the four others in a transverse series immediately behind the symphysis of the mandible. Teeth villiform in the jaws, palate edentulous. Eyes behind, and partly below the level of, the angle of the mouth. The gill-opening does not extend downwards beyond the root of the pectoral, the gill-membranes being united with the isthmus. Bones of the head hidden below the skin. Ventrals with fourteen rays, inserted behind the dorsal.

Brazil and Surinam.

1. **Euanemus nuchalis.**

Hypophthalmus nuchalis, *Spix, Pisc. Bras.* p. 17. tab. 17.
Auchenipterus nuchalis, *Cuv. & Val.* xv. p. 208; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 423.
—— dentatus, *Cuv. & Val.* xv. p. 210.
Euanemus colymbetes, *Müll. & Trosch. Hor. Ichth.* iii. p. 11. taf. 1. fig. 2.

B. 7. D. 1/6. A. 42–45. P. 1/11. V. 14.

Head small, one-fifth, or rather less than one-fifth, of the total length (without caudal), covered with soft skin; groove between the frontal bones very long, extending nearly to the occipital; humeral process short, hidden below the skin. Dorsal spine feeble, slightly serrated behind. Caudal fin with a moderately deep incision. The end of the upper caudal lobe black.

Brazil and Surinam.

a. Half-grown. River Capin, Para. Purchased of Mr. Stevens.

75. AUCHENIPTERUS*.

Auchenipterus, *Cuv. & Val.* xv. p. 207.
Pseudauchenipterus, Trachycorystes, Parauchenipterus, Auchenipterichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 88.

Adipose fin very short; dorsal fin short, with a pungent spine and with five or six soft rays; anal fin long. Barbels six, cylindrical, those of the mandible being inserted at some distance from the symphysis, there being an anterior and a posterior pair. Teeth villiform in bands, or sometimes rudimentary and deciduous; palate edentulous. Eyes above the level of the angle of the mouth. The gill-opening does not extend downwards beyond the root of the pectoral. Ventrals with from six to ten rays, inserted behind the dorsal.

Tropical America.

1. Auchenipterus nodosus.

Silurus nodosus, *Bl.* taf. 368. fig. 1; *Bl. Schn.* p. 383.
Arius nodosus, *Cuv. & Val.* xv. p. 70.
Auchenipterus furcatus, *Cuv. & Val.* xv. p. 211.
—— nodosus, *Müll. & Trosch. Hor. Ichth.* iii. p. 11; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 424.

B. 6. D. $\frac{1}{5-6}$ A. 20–23. P. 1/7. V. 8. Vert. 8/29.

The bones of the head and neck cellular, those above the eye swollen and rather prominent. The groove between the frontal bones is open in front. The humeral process does not extend backwards to the middle of the pectoral spine. Dorsal and pectoral spines very long, much longer than the head, not serrated along their outer margin; the former with a large swelling at its base. Caudal fin deeply forked.

Guiana.

a–c. Fine specimens. British Guiana. Purchased of Mr. Leadbeater.
d, e–f. Half-grown. Dutch Guiana.
g. Adult. French Guiana.
h, i–k, l. Adult, half-grown, and young. Demerara. Purchased of Mr. Scrivener.
m–o. Adult: stuffed. Demerara. Purchased of Mr. Scrivener.
p. Adult: skeleton. British Guiana. Purchased of Mr. Leadbeater.

Dr. v. Bleeker gives a generic name to this species (*Pseudauchenipterus*), adding "cirri inframaxillares omnes rictui approximati;" I find an anterior and a posterior pair of barbels, as in its congeners.

2. Auchenipterus thoracicus.

Auchenipterus thoracatus, *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 425. fig. 22.

D. 1/5. A. 26–27. P. 1/8. V. 9.

The bones of the head and neck are finely granulated; nuchal plates tectiform; an oblong granulated plate on each side of the belly below the pectoral fin; a groove between the frontals, open in front. Lower jaw scarcely shorter than the upper; the maxillary barbels extend beyond the gill-opening. The humeral process reaches backwards to the posterior third of the pectoral spine. Dorsal spine slightly serrated in front, as long as the head. Caudal obliquely truncated. Small light spots along the lateral line. (*Kner.*)

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* 1. Arius oncina. *Schomb. Fish. Brit. Guian.* i. p. 173. pl. 4.—British Guiana.

Rio Guaporé.

3. Auchenipterus trachycorystes.

Cuv. & Val. xv. p. 215. pl. 437 (from a stuffed example).

D. 1/6. A. 20. P. 1/6. V. 9 or 10.

The bones of the head and neck finely granulated; a round groove between the frontals, surrounded by bone. Lower jaw rather longer than the upper; maxillary barbels not longer than the head. Pectoral spine very strong, serrated along both edges, one-seventh of the total length, not extending beyond the extremity of the pectoral process; dorsal spine nearly as long as that of the pectoral, crenulated in front. Caudal truncated. (*Val.*)

Brazil.

4. Auchenipterus obscurus.

D. 1/5. A. 19–20. P. $\frac{1}{7-8}$. V. 9.

The bones of the head and neck are rather coarsely granulated; a small round groove between the frontals, surrounded by bone. Lower jaw rather longer than the upper; the maxillary and the hinder mandibulary barbels extend to, or somewhat beyond, the extremity of the humeral process; the anterior mandibulary barbels are twice or thrice as long as the eye. The humeral process extends backwards beyond the middle of the pectoral spine. Dorsal and pectoral spines serrated, the former along its anterior edge, the latter along both edges; the dorsal spine is considerably shorter than that of the pectoral fin, the latter being as long as the head, and one-fourth of the total length (without caudal). Caudal fin slightly emarginate, the upper lobe being scarcely longer than the lower. Lateral line irregularly undulated. Uniform brownish black.

Essequibo.

a–b. Eight and a half inches long. Purchased of Mr. Ehrhardt.

5. Auchenipterus longimanus.

D. 1/5. A. 22. P. 1/6. V. 10.

The bones of the head and neck finely granular; groove between the frontals open in front. Jaws equal anteriorly; the maxillary barbels extend to the middle of the humeral process, the anterior chin-barbels shorter than the eye. The humeral process extends backwards beyond the middle of the pectoral spine. Dorsal and pectoral spines serrated along both edges, the former as long as the head, but much shorter than the pectoral spine, which is strongly compressed, and two-sevenths of the total length (without caudal); ventral and anal fins with fleshy base. Caudal slightly emarginate, the upper lobe being rather longer and less obtuse than the lower. A double series of pores along the lateral line, each pore being in the centre of a small round whitish spot. Body deep brown.

Para.

a–c. Fine specimens (7 inches long). River Capin. Purchased of Mr. Stevens.

6. **Aucheniptervs ceratophysus.**

Kner, Sitzgsber. Wien. Acad. 1858, xxvi. p. 427. fig. 23.

D. 1/5. A. 20. V. 6.

The bones of the head and neck finely granular, equally convex; the lower jaw is the longer; the maxillary barbel extends somewhat beyond the root of the pectoral; humeral process pointing obliquely upwards. Dorsal spine rather short, serrated in front. Anal fin with fleshy base; caudal obliquely truncated. Head and fins with brown spots. (*Kner.*)

Matogrosso.

7. **Auchenipterus maculosus.**

Auchenipterus maculosus, *Cuv. & Val.* xv. p. 216.
—— immaculatus, *Cuv. & Val.* xv. p. 218.

D. 1/6. A. 24. P. 1/7. V. 6.

The bones of the head and neck granular; no groove between the frontals, only a small round hole surrounded by bone. The lower jaw is the longer; the anterior mandibulary barbels are nearly half as long as the head; the humeral process extends backwards beyond the middle of the pectoral spine. Dorsal spine slightly crenulated in front, shorter than that of the pectoral; the latter is serrated along both edges, rather shorter than the head, and two-ninths of the total length (without caudal). Caudal fin obliquely truncated. Brown, spotted with dark brown; sometimes uniformly coloured.

Guiana; northern Brazil.

a. Adult. Surinam. Purchased of Mr. Frank.
b. Large specimen. Essequibo. From Mr. Ehrhardt's Collection.

8. **Auchenipterus galeatus.**

Seba, iii. 29. 7.
Silurus galeatus, *L. Syst. Nat.* i. p. 503.
? Silurus galeatus, *Bloch*, taf. 369. fig. 1; *Bl. Schn.* p. 384.
Auchenipterus punctatus, *Cuv. & Val.* xv. p. 219; *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 425.

D. 1/6. A. 24–25. P. 1/7. V. 6.

The bones of the head and neck minutely granular; a groove between the frontals, open or only slightly closed in front; jaws subequal in length anteriorly; the anterior mandibulary barbels half as long as the head; the humeral process extends backwards to the posterior third of the pectoral spine. Dorsal spine smooth in front, shorter than that of the pectoral fin; the latter is strongly serrated along both edges, shorter than the head, and two-ninths or one-fifth of the total length (without caudal). Caudal fin obliquely truncated. Brown, with dark-brown spots.

Guiana; Brazil.

a. Half-grown. British Guiana. Purchased of Mr. Leadbeater.
b. Adult. Guiana. Purchased of Mr. Scrivener.

9. **Auchenipterus robustus.**

D. 1/6. A. 28. P. 1/7. V. 6.

The bones of the head and neck are coarsely granulated; groove between the frontals short, ovate, surrounded by bone. The lower jaw is the longer; the maxillary barbels extend to the end of the pectoral; the anterior chin-barbels not quite half as long as the head. The humeral process extends backwards to the posterior third of the pectoral spine. Dorsal spine much more feeble and shorter than that of the pectoral fin, slightly crenulated in front; pectoral spine strongly serrated along both edges, as long as the head, and one-fiftl of the total length (without caudal); ventral and anal fins with fleshy base; caudal obliquely truncated. No granulated plate on the side of the belly. Uniform dark brown.

Demerara.

a. Nine inches long. Purchased of Mr. Scrivener.

76. CENTROMOCHLUS.

Centromochlus, *Kner, Sitzgsber. Wien. Acad.* 1858, xxvi. p. 430.

Adipose fin very short; dorsal fin short, with a pungent spine and with four or five soft rays; anal fin very short. Barbels six, cylindrical, those at the mandible short, and disposed as an anterior and as a posterior pair. Teeth villiform, none on the palate. The gill-opening does not extend downwards beyond the root of the pectoral. Ventrals with six rays, inserted behind the dorsal.

South America. Small Siluroids.

1. **Centromochlus heckelii.**

Auchenipterus heckelii, *Filippi, Guér. Rev. et Mag. Zool.* 1853, p. 166.
Centromochlus megalops, *Kner, l. c.* fig. 24.

D. 1/5. A. 7. P. 1/6.

Head and neck granulated above; eye very large, one-third of the length of the head; the maxillary barbels reach to the middle of the pectoral spine. Dorsal spine serrated behind, rather longer than the head, but shorter than that of the pectoral fin, which is nearly one-third of the total length. Caudal fin deeply forked. Coloration uniform.

Bogota; Rio Napo.

2. Centromochlus aulopygius.

Kner, l. c. p. 432. fig. 25.

D. $\frac{1}{4-5}$. A. 9–10. P. 1/4.

Head and neck granulated above; eye of moderate size, one-fourth of the length of the head; the maxillary barbels reach to the middle of the pectoral spine. Dorsal spine serrated in front, smooth behind, shorter than that of the pectoral fin, which is as long as the head. Caudal deeply emarginate. Back and sides brown; dorsal and caudal fins with blackish or whitish spots and dots.

Rio Guaporé; Essequibo.

a–c. Five inches long. Essequibo. From Mr. Ehrhardt's Collection.

77. TRACHELYOPTERUS.

Trachelyopterus, *Cuv. & Val.* xv. p. 220.
Trachelyopterus et Trachelyopterichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 111.

Adipose fin none; dorsal fin short, with a pungent spine and with four or five soft rays; anal fin long. The upper surface of the head osseous. Barbels six. Teeth villiform, none on the palate. The gill-opening does not extend downwards beyond the root of the pectoral.

South America.

a. Ventral smallish, with six rays: *Trachelyopterus*, Blkr.

1. Trachelyopterus coriaceus.

Cuv. & Val. xv. p. 221. pl. 438.

B. 6. D. 1/5. A. 32. P. 1/7.

Head and neck granulated above; the length of the head is rather more than one-fourth of the total (without caudal); the lower jaw is the longer. The maxillary barbel extends to the origin of the dorsal; humeral process short. Dorsal spine rather feeble; pectoral spine strong, not serrated along its outer margin. Caudal rounded. (*Val.*)

Cayenne.

β. Ventral large, with sixteen rays: *Trachelyopterichthys*, Blkr.

2. Trachelyopterus tæniatus.

Kner, Sitzgsber. Wien. Acad. 1858, xxvi. p. 434. fig. 26.

D. 1/4. A. 51. P. 1/6.

Head and neck granulated above; the length of the head is nearly one-sixth of the total (without caudal); the lower jaw is the longer. The maxillary barbels extend beyond the base of the pectorals; humeral process long. Dorsal spine granulated, of moderate strength, half as long as the head; pectoral spine longer than the head, compressed, serrated along both edges. The ventrals extend beyond the origin of the anal; caudal subtruncated. (*Kner.*)

Rio Guaporé.

78. CETOPSIS.

Cetopsis, *Agass. in Spix, Pisc. Bras.* p. 11.
Cetopsis, Hemicetopsis, et Pseudocetopsis, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 111.

Dorsal fin short, without pungent spine; no adipose fin; the anal terminates at some distance from the caudal, which is forked. The upper jaw is the longer. Barbels six: one to each maxillary, and two to each mandible. Vomerine and mandibulary teeth obtusely conical, strong, in a single series; palatine teeth none. Nostrils remote from each other, of nearly equal width; the posterior is quite on the upper surface of the head, close to its fellow from the other side. Head covered with thick skin. Eye rudimentary, more or less hidden below the skin. Gill-opening very narrow.

Brazil.

1. **Cetopsis cæcutiens.**

Silurus cœcutiens, *Lichtenst., Wiedem. Zool. Mag.* 1819, i. pt. 3. p. 61.
Cetopsis cœcutiens, *Agass. l. c.* p. 12. tab. 10 fig. 2, and tab. A. fig. 5 (anatomy); *Kner, Sitzungsber. Acad. Wiss. Wien*, 1858, xxvi. p. 409.

B. 8. D. 7. A. 22. P. 10. V. 6.

Intermaxillary with a band of villiform teeth. Barbels short. The first dorsal and pectoral rays, in the male, are produced into very long filaments. Uniform greyish.

Brazil.

a. Fine specimen. River Cupai (branch of the Amazons, 800 miles from the sea). Purchased of Mr. Stevens.

2. **Cetopsis candira.**

Agass. l. c. p. 13. pl. 10. fig. 1; *Kner, Sitzungsber. Acad. Wiss. Wien*, 1858, xxvi. p. 409.

D. 7. A. 29. P. 9. V. 6.

Intermaxillary with a single series of teeth. Barbels short. Uniform greyish.

Brazil.

a. Fine specimen. River Cupai. Purchased of Mr. Stevens.

3. **Cetopsis gobioides.**

Kner, Sitzungsber. Acad. Wiss. Wien, 1858, xxvi. p. 407. fig. 16.

Intermaxillary with a band of villiform teeth. Ventral fins united. The first dorsal and pectoral rays are produced into filaments in the male. Greyish brown.

Irisanga.

79. ASTEROPHYSUS.

Asterophysus, *Kner, Sitzungsber. Wien. Acad.* xxvii. p. 402.

A short adipose fin; dorsal fin short, with a pungent spine and with six (five) soft rays; anal fin short. Head covered with soft skin above; barbels six, four of which are at the mandible; eyes rather small, below the skin. Cleft of the mouth very wide, extending far behind the eye; teeth in the jaws villiform; those on the palatines separated by the toothless vomer. The lower jaw prominent. The gill-opening does not extend on to the throat. Ventrals ten-rayed, inserted behind the dorsal.

Brazil.

1. Asterophysus batrachus.

Kner, l. c. p. 403. taf. 5.

B. 4–5. D. 1/5 (6?)*. A. 13. P. 1/7. V. 10.

Head as broad as long; the maxillary barbels extend somewhat behind the head. Dorsal and pectoral spines rather feeble; caudal forked, with the lobes rounded. Coloration uniform. (*Kner.*)

Marabitanos.

80. DORAS†.

Doras, sp., *Lacép., Cuv. & Val., Kner.*

Centrochir, Lithodoras, Pterodoras, Platydoras, Acanthodoras, Astrodoras, et Amblydoras, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 84.

Adipose fin short, very distinct; dorsal with a strong spine and with from five to seven soft rays; anal short. Teeth villiform, forming bands in both jaws; palate edentulous. Cleft of the mouth rather narrow; barbels six, free, and not fringed. Eyes of moderate size. Neck with broad dermal bones; a large humeral process above the pectoral fin; a series of shields along the middle of the side of the body and tail, each shield with a compressed, prominent, curved central spine. Gill-openings of moderate width, not extending downwards to the throat. Ventral fins with seven rays, inserted behind the dorsal.

Rivers of South America flowing into the Atlantic.

The species may be divided into two groups:—

* Lateral shields more than twenty, p. 201.

** Lateral shields less than twenty, p. 205.

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* The figure shows six rays, the description five.

† 1. Doras crocodili, *Humb. Observ. Zool.* ii. p. 184. pl. 48. fig. 2.—Centrochir crocodili, *Agass. in Spix, Pisc. Bras.* p. 14.—Rio Magdalena.

2. —— castaneo-ventris, *Schomb. Fish. Brit. Guian.* p. 161. pl. 3.—River Pasawiri.

3. —— brunnescens, *Schomb. l. c.* p. 163. Upper Essequibo.

* Lateral shields more than twenty.

1. Doras costatus.

Mystus, sp., *Gronov. Mus. Ichth.* ii. p. 24. pl. 5. figs. 1 & 2.
Silurus costatus, *L. Syst. Nat.* i. p. 506.
Cataphractus costatus, *Bl.* taf. 376.
Doras costatus, *Lacép.* v. p. 117; *Cuv. & Val.* xv. p. 268.

D. $\frac{1}{5-7}$. A. 11. P. $\frac{1}{6-8}$. V. 7. L. lat. 31–33.

Lateral shields very high, covering the whole side of the body and tail, coarsely granular, not extending downwards to the base of the anal fin. The humeral spine is about four times as long as high, and reaches nearly to the posterior third of the pectoral spine; the posterior part of the tail shielded above and below. The maxillary barbel reaches to the end of the humeral spine. Dark brown; a yellow band along the lateral line, both bands convergent between the eyes. Dorsal fin with a large blackish blotch.

British Guiana; Brazil.

a. Adult. British Guiana. Presented by Sir R. Schomburgk.
b. Young. River Cupai. Purchased of Mr. Stevens.

2. Doras armatulus.

Doras armatulus, *Cuv. & Val.* xv. p. 273; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 116.

D. 1/6. A. 12. P. 1/6. V. 7. L. lat. 28–29.

Lateral shields very high, covered with spines which are directed backwards, the posterior projecting beyond the margin of each spine. The humeral spine is twice as long as high; the posterior part of the tail shielded above and below. The maxillary barbels extend beyond the base of the pectoral, the outer ones of the mandible being but little, the two inner ones considerably shorter. Eye of moderate size. Brown: a yellowish band commences above the eye, and runs along the middle of the lateral shields to the end of the caudal fin; a less distinct band runs along the median line of the back. Dorsal fin with a large blackish blotch above.

Brazil (Parana, Rio Guaporé and Rio Paraguay).

3. Doras dentatus.

Doras dentatus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 118. taf. 3. fig. 3.

D. 1/6. A. 12. P. 1/7. V. 7. L. lat. 31.

Lateral shields well developed, the height of the third being more than one-half of the length of the head; the following gradually become lower, and the last caudal shields are scarcely one-third as high as the third; each shield with ridges radiating from the base of the large central hook; the ridges terminate in marginal hooklets, of which, however, there is only one above and below the central hook of the middle and hinder shields. The humeral spine reaches to below the second lateral shield, and is four times as long as high; it terminates in a point, and its upper and lower margins are prominent, ridge-like, and denticulated. The posterior part of the tail is shielded above and below. The maxillary barbel does not reach to the end of the humeral spine; none of the barbels are fringed. Brown, without yellow lateral band; a blackish-brown spot behind each hook of the lateral shields. (*Kner.*)

Surinam.

4. **Doras hancockii.**

Doras costata, *Hancock, Zool. Journ.* iv. p. 242 (not *L.*).
—— hancockii, *Cuv. & Val.* xv. p. 279.

D. 1/6. A. 9. P. 1/6. V. 7. L. lat. 29–33.

Lateral shields very high, covering the whole side of the body and tail, extending downwards to the root of the anal, with numerous longitudinal ridges, each of which terminates in a small marginal point. The humeral process is rather broader than the pectoral spine, and does not quite extend to its posterior third. Hinder part of the tail shielded above and below. Adipose fin without spinous ray. The maxillary barbel reaches to the root of the pectoral. Brown, a lighter band along the lateral line.

Demerara; Brazil.

a. Type of the species: stuffed. Presented by Dr. Hancock.
b. Adult. River Cupai. Purchased of Mr. Stevens.

5. **Doras muricus.**

? *Marcgrav.* p. 174.
? Doras granulosus, *Valenc. in Humb. Observ. Zool.* ii. p. 184.
? Doras maculatus, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 5. fig. 3; *Cuv. & Val.* xv. p. 281.
Doras muricus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 129.

D. 1/6. A. 13. P. 1/9. V. 7. L. lat. 27.

Lateral shields rather small, lower than the hinder portion of the tail. Humeral process granulated, slender, much narrower than, and extending to the hinder fourth of, the pectoral spine. Dorsal spine serrated in front and behind. The upper and lower surfaces of the tail are not shielded; adipose fin small, without spinous ray. Fins with brown dots; skin on the back with minute black tubercles.

Brazil; Buenos Ayres.

a. Adult, 21 inches long: stuffed. Demerara?

6. **Doras affinis.**

Doras affinis, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 121. fig. 1.

D. 1/6. A. 12. P. 1/5. V. 7. L. lat. 25–26.

Lateral shields very high, nearly entirely covered with skin, each with a series of small marginal spines. The humeral process is long, not broader than, and extending to the posterior third of, the pectoral spine. Tail without shields on its upper and lower surfaces. Caudal fin subtruncated. Dorsal spine without any serrature. Barbels simple, those of the maxillary extending to the extremity of the humeral process. Eye of moderate size, the superciliary margin not elevated. Brownish, body and fins with darker spots; a light band along the middle of the sides; caudal fin dark, with a broad light cross-band. (*Kner.*)

Rio Branco and Guaporé.

Amblydoras truncatus, Bleek. (Nederl. Tydschr. Dierk. 1863, i. p. 18), has been separated from the preceding species, but its characters have not been sufficiently indicated.

7. Doras weddellii.

? Doras weddellii, *Casteln. Anim. Amér. Sud, Poiss.* p. 48. pl. 17. fig. 1.

D. 1/4 (?). A. 11. V. 7. L. lat. 27.

Lateral shields low, not quite half as high as the hind portion of the tail; there is a small spine above and below the large one. The free portion of the tail has a series of small scutes above and below. Head broader than high; its length to the basal bone of the dorsal spine is two-fifths of the total (without caudal), its length to the gill-opening two-sevenths. The height of the body is contained thrice and two-thirds in the total length (without caudal). Snout obtusely rounded; the maxillary barbels extend beyond the end of the head. Nape broadly shielded, the least width of the nuchal carapace being equal to that of the interorbital space. The humeral process is narrow, pointed behind, extending to the hinder fourth of the pectoral spine; it is provided with a series of small tubercles. Dorsal spine strong, without any serrature, four-fifths of the length of the head. The pectoral spine is still stronger and longer, strongly serrated along both edges. Caudal fin forked. Superciliary edge not elevated. Brown above, marbled with darker; an irregular series of small black spots above and below the lateral line.

Brazil.

a. Four and a half inches long. Santarem. From Mr. Bates's Collection.

8. Doras asterifrons.

Doras asterifrons (*Heckel*), *Kner, Sitzungsber. Wien. Acad.* 1855, xvii. p. 123. fig. 2.

D. 1/6. A. 11–12. P. $\frac{1}{5-6}$. V. 7. L. lat. 24–25.

Lateral shields high, but partly covered with skin; each is provided with a triangular prominent spine above and below the central hook; several other small spines occupy the posterior margins. The humeral process is long, not broader than, and extending to beyond the middle of, the pectoral spine; it is tapering and provided with a series of small curved spines. The pectoral spine extends backwards to beyond the root of the ventral; a portion of the bones of the thorax are free, not covered with skin, striated. Dorsal spine finely serrated in front, without denticulations behind; there is only one very small shield on the upper and lower surfaces of the tail, immediately before the root of the caudal fin; the latter but slightly emarginate. Barbels simple; those of the maxillary extend to the extremity of the humeral process. Eye of moderate size, with the superciliary margin elevated, the interorbital space being concave. Nasal bones with the upper margin finely but deeply serrated. Brownish, fins with dark spots.

R. Negro, R. Guapore. R. Cupai.

a. Young. River Cupai. Purchased of Mr. Stevens.

9. **Doras heckelii.**

Doras heckelii, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 125. fig. 4.

D. 1/6. A. 12. P. 1/6. L. lat. 29.

Lateral shields rather low, nearly covered by skin, out of which only the hooks and spines project; each shield with a series of marginal spines, of which the one nearest to the hook is the largest. Humeral process striated, slender, tapering, not broader than the pectoral spine, and extending to below the third lateral shield. The pectoral spine reaches somewhat beyond the root of the ventral; dorsal spine serrated only anteriorly, not behind. Caudal fin slightly emarginate. The upper and lower surfaces of the tail are not shielded. Eye of moderate size, superciliary margin not elevated. The maxillary barbels do not extend to the middle of the pectoral spine. Brownish, with darker spots. (*Kner.*)

Rio Negro.

10. **Doras cataphractus.**

? Callichthys, sp., *Gronov. Mus. Ichth.* i. p. 28. tab. 3. figs. 4 & 5.
? Silurus cataphractus, *L. Syst. Nat.* i. p. 506.
? Cataphractus americanus, *Bl. Schn.* p. 107. tab. 28.
Doras cataphractus, *Cuv. & Val.* xv. p. 276; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 126.
? Doras blochii, *Cuv. & Val.* xv. p. 277.
? Callichthys asper, *Gronov. Syst. ed. Gray.* p. 157.

D. 1/4. A. 9. P. 1/4. V. 6. L. lat. 25–29.

Lateral shields very high, each with a single series of small prominent spines along and near the posterior margin. The humeral process is long, not broader than, and extending to the posterior fourth of, the pectoral spine; it is tapering and provided with a series of small curved spines. Tail without shields on its upper and lower surfaces. Caudal rounded. Dorsal spine with three slightly serrated ridges, one in front and one on each side; it is not denticulated behind. Barbels simple, those of the maxillary extending to the extremity of the humeral process. Eye small. Brownish, with a yellowish band along the middle of the sides of the body and along the median line of the back. Fins with brownish spots.

Rio Guaporé and Rio Negro.

a. Skin, 4½ inches long. From Gronow's Collection.—This is not the typical specimen of the species, described and figured by Gronow, *l. c.*; he says that he saw it in Seba's Collection: and besides, the present specimen is considerably larger than the one figured.

It appears to be extremely doubtful whether the specimens described by Gronow and Schneider really had a spine in the adipose fin; and it is very probable that Valenciennes and Kner are right in identifying specimens examined by them, without such a spine, with the species described by the old ichthyologists.

** Lateral shields less than twenty.

11. **Doras dorsalis.**

Doras carinatus, *Valenc. in Humb. Observ. Zool.* ii. p. 184 (not synon.).
—— dorsalis, *Cuv. & Val.* xv. p. 284; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 128.

D. 1/6. A. 14. P. 1/8. V. 7. L. lat. 16–17.

The anterior lateral shields kidney-shaped, the posterior longitudinally ovate. The humeral process is short and narrow, extending to the middle of the pectoral spine, and tapering behind. The maxillary barbels reach to the extremity of the humeral spine, and are twice as long as the outer mandibulary barbels. The back between the first dorsal fin and the caudal, and the space between the anal and caudal are shielded, but these shields are sometimes very small; a shield on each side of the base of the adipose fin.

Cayenne; Pará Rio.

12. **Doras lithogaster.**

Doras lithogaster (*Heck.*), *Kner, Sitzungsber. Wien. Acad.* 1855, xvii. p. 132.

B. 7. D. 1/6. A. 13. P. 1/8. V. 7. L. lat. 16–17.

Both jaws with a band of villiform teeth. Barbels not fringed: those of the maxillaries extend scarcely to the operculum, the outer ones of the mandible being one-half shorter than the former, but longer than the inner ones. Eye rather small. The humeral process is short and narrow, terminating in a rounded point, opposite the middle of the pectoral spine. The second lateral shield is the highest, reaching another large one situated along the base of the dorsal fin. A series of shields along the dorsal line, between the dorsal and caudal fins; another along the lower side of the tail, between ventral and caudal fins. All the parts between the series of shields and the sides of the head are covered with more or less scattered small shields. Back clouded with blackish. (*Kner.*)

Forte do Rio Branco.

13. **Doras papilionatus.**

Doras papilionatus, *Filippi, in Guér.-Ménev. Rev. & Mag. Zool.* 1853, p. 167.

D. 1/6. A. 12. L. lat. 18.

Five shields on the back between the dorsal and adipose fins, the space between the adipose and caudal being naked. (*Fil.*)

River Amazons.

81. OXYDORAS.

Oxydoras, sp. et Doras, sp., *Kner.*
Doras, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 84.

Adipose fin short, very distinct; dorsal with a strong spine and with six soft rays; anal short. Teeth rudimentary, sometimes present in the lower jaw only, sometimes entirely absent. Cleft of the mouth rather narrow; barbels six, fringed and united at the base by a fold of the skin. Eyes of moderate size. Neck with broad dermal bones; a large humeral process above the pectoral fin; a series of shields along the middle of the side of the body and tail, each shield with a compressed, prominent, curved central spine. Gill-openings of moderate width, not extending downwards to the throat. Ventral fins with seven rays, inserted behind the dorsal.

Rivers of South America flowing into the Atlantic.

1. **Oxydoras carinatus.**

Silurus carinatus, *L. Syst. Nat.* i. p. 504; *Bl. Schn.* p. 108.
Doras oxyrhynchus, *Valenc. in Humb. Observ. Zool.* ii. p. 184.
—— carinatus, *Cuv. & Val.* xv. p. 288. pl. 440 (bad).
Oxydoras carinatus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 144.

D. 1/6. A. 12–13. P. 1/9. V. 7. L. lat. 33.

Adipose fin short. Lateral shields small, half covered with thin skin; the upper and lower halves of each shield terminate behind in a simple or bifid or trifid spine. Tail without shields on its upper and lower surfaces. Humeral process striated, obtuse behind, twice as broad as, and extending nearly to the hinder third of, the pectoral spine. Eye of moderate size, its diameter being rather more than its distance from the posterior nostril. The bases of the six barbels are united by a broad membrane fringing the lower jaw; the maxillary barbel is provided with a series of from six to eight smaller tentacles along its basal half, and extends to the eye: the mandibulary are only one-third as long, and have their lower surface covered with papillæ. Lower jaw with two patches of minute teeth in front *. Uniform greenish olive above, whitish below.

Surinam.

a. Adult: 13 inches long. Surinam.
b–c. Fine specimens. Essequibo River. Purchased of Mr. Ehrhardt.

2. **Oxydoras humeralis.**

Doras humeralis (*Heckel*), *Kner*, *Sitzungsber. Wien. Acad.* 1855, xvii. p. 140. fig. 6.

D. 1/6. A. 12. P. 1/8. V. 7. L. lat. 32.

The lower profile of the head ascends in a curve similar to that in which the upper descends; snout pointed. Adipose fin short and small. Lateral shields rather small and narrow, each provided with a series of marginal spines. Tail without shields on its upper and lower surfaces. Humeral process striated, obtuse behind, nearly half as broad as long. Eye rather large, its diameter being much longer than its distance from the posterior nostril. The bases of the barbels are united by a membrane fringing the lower jaw; those of the maxillaries are provided with small tentacles, and extend to below the eye. No teeth in the upper jaw; those of the lower quite rudimentary. Uniform brownish above, whitish below. (*Kner.*)

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* Our specimen *a*. has two or three minute teeth on the right-hand side in the upper jaw; the other side is without any teeth.

Barra do Rio Negro.

3. **Oxydoras punctatus.**

Doras punctatus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 136. fig. 10.
Corydoras punctatus, *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 17.

D. 1/6. A. 13. P. 1/7. V. 7. L. lat. 28–29. Vert. 6/21.

Adipose fin short. Lateral shields rather small, half covered with thin skin, and with the hind margins serrated. Tail without shields on its upper and lower surfaces. Humeral process obliquely truncated behind, not much broader than the pectoral spine. Eye rather large, its diameter being equal to its distance from the anterior nostril. Barbels provided with tentacles: those of the maxillaries do not extend backwards to the gill-opening; the mandibulary barbels are united at the base by a membrane, and sometimes one or two are bifid. A narrow band of small teeth in the lower jaw, the teeth of the upper being scarcely visible, if present. Upper parts of the body and the fins with small blackish spots. (*Kner.*)

Matogrosso; Rio Guaporé.

4. **Oxydoras brevis.**

Doras brevis (*Heckel*), *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 138. fig. 11.

D. 1/6. A. 13–14. P. 1/7. V. 7. L. lat. 29–30.

Lateral shields of moderate size, not quite half as high as the body, each with a series of spines along its hinder margin. Humeral process obliquely truncated behind, much broader than, and extending beyond the middle of, the pectoral spine; its point is not much more distant from the root of the caudal fin than from the end of the snout. The upper and lower surfaces of the tail are not shielded. Adipose fin as long as anal, without spinous ray. Eye rather large. Barbels short, provided with tentacles; the four mandibulary barbels united by a membrane at the base. Very small teeth in the lower jaw only, none in the upper. Reddish brown above, whitish below. (*Kner.*)

Barra do Rio Negro.

5. **Oxydoras fimbriatus.**

Doras fimbriatus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 134. fig. 5.

D. 1/6. A. 11. P. 1/8. V. 7. L. lat. 29–30.

Adipose fin short. Lateral shields high, with the hind margins finely serrated; the first is very large, reaching downwards to the humeral process and to the thoracic plates, which are naked, and bent upwards on the sides of the body. A single broad shield before the root of the caudal, on the upper and lower surfaces of the tail. The humeral process is elongate, not tapering behind, terminating in a rounded extremity before the first lateral shield. Eye rather large, its diameter being two-thirds of the length of the snout. The maxillary barbels are provided with long tentacles, and extend to behind the base of the pectoral fin; the four mandibulary barbels are short, and united at their base by a membrane. The upper and lower jaws with a narrow band of minute teeth. Brown, with blackish spots. (*Kner.*)

Rio Guaporé.

6. **Oxydoras stenopeltis.**

Oxydoras stenopeltis (*Heck.*), *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 142. fig. 7.

D. 1/6. A. 13–14. L. lat. 35–36.

Adipose fin short. Lateral shields high, at least half as high as the body, each with several series of small spines; five or six shields between the dorsal and adipose fins. Humeral process striated, obliquely truncated behind, not much broader than, and extending to the posterior third of, the pectoral spine. Eye rather large, its diameter being equal to its distance from the anterior nostril. The bases of the barbels are united by a membrane: those of the maxillary are provided with a series of small tentacles, and extend to behind the root of the pectoral; those of the mandible are short and covered with papillæ. Teeth none, or quite rudimentary. Brownish above, whitish below. (*Kner.*)

Rio Negro.

7. **Oxydoras lipophthalmus.**

Oxydoras lipophthalmus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 147. fig. 8.

D. 1/6. A. 12. P. 1/9. V. 7. L. lat. 37–38.

Adipose fin short. Lateral shields small, half covered with thin skin, smooth, with the posterior margin serrated. Tail without shields on its upper and lower surfaces. Humeral process wrinkled, obliquely rounded behind, much broader than, and extending backwards to the middle of, the pectoral spine. Eye large, covered with an adipose membrane which is produced closely to the hind nostril. The bases of the barbels are united by a broad membrane fringing the lower jaw; all are provided with small tentacles, and the maxillary and outer mandibulary barbels are bifid; the former extend scarcely to the gill-opening, and the latter are rather more than half as long. Teeth none, or quite rudimentary in the lower jaw. Brownish above, whitish below.

Rio Negro; River Capin.

a. Fine specimen. River Capin. Purchased of Mr. Stevens.

82. RHINODORAS.

Oxydoras, sp., *Kner.*
Oxydoras et Rhinodoras, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 84.

Adipose fin low, rather elongate, gradually passing into the profile of the back; dorsal fin with a strong spine and with six soft rays; anal short. Teeth very small, or entirely absent. Cleft of the mouth rather narrow; barbels six, not united at the base. Eyes small. Neck with broad dermal bones; a large humeral process above the pectoral fin; a series of shields along the middle of the side of the body and tail, each shield with a compressed, prominent central spine. Gill-openings of moderate width, not extending downwards to the throat. Ventral fins with seven rays, inserted behind the dorsal.

Rivers of South America flowing into the Atlantic.

1. Rhinodoras niger.

Doras niger, *Valenc. in Humb. Observ. Zool.* ii. p. 184; *Cuv. & Val.* xv. p. 291.
Corydoras edentulus, *Spix, Pisc. Brasil.* tab. 5.
Doras humboldti, *Agass. in Spix, Pisc. Brasil.* p. 14.

D. 1/6. A. 11–12. P. 1/10. V. 7. L. lat. 24–25.

The adipose fin is a long and low fold. Lateral shields longitudinally striated, of moderate size, the middle being about half as high as the body. Humeral process granulated, tapering behind, and extending somewhat beyond the middle of the pectoral spine. The upper and lower surfaces of the tail are not shielded. Eye small, its diameter being one-half of its distance from the posterior nostril. The maxillary barbels extend to the eye, and are thicker but not much longer than those of the mandible, which are not united by a membrane. Teeth none. Blackish olive; shields yellowish.

River Amazons. San Francisco River.

a. Adult (13 inches long). River Amazons. Purchased of Mr. Stevens.

2. Rhinodoras knerii.

Oxydoras niger, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 146 (not *Valenc.*).
—— knerii, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 14.

D. 1/6. A. 11–12. L. lat. 34.

This species appears to be distinct from *Rh. niger*, having 34 lateral shields; otherwise they are very similar to each other.

Cujaba.

3. Rhinodoras orbignyi.

Oxydoras d'Orbigny (*Kröy.*), *Kner, Sitzgsber. Wien. Acad.* 1855, p. 149. fig. 9.
Doras d'Orbignii, *Hyrtl, Denkschr. Acad. Wiss. Wien,* 1859, xvi. .17.
Rhinodoras orbignyi, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 1 .

D. 1/6. A. 12. L. lat. 29. Vert. 10/21.

Adipose fin long, rather low, gradually passing into the profile of the back. Lateral shields of moderate height, with the hind margins serrated. The upper and lower surfaces of the tail are shielded behind the adipose and anal fins. Humeral process striated, sword-shaped, broader than, and extending to the hinder fourth of, the pectoral spine. Eye small, covered by a membrane, as distant from the end of the snout as from the gill-opening. The barbels are free, not united at the base, provided with very small tentacles; those of the maxillaries do not extend to the gill-opening. Teeth very small, present in both jaws. Dorsal and caudal fins with dark spots. (*Kner.*)

Rio de la Plata.

83. SYNODONTIS.

Synodontis, *Cuv. & Val.* xv. p. 244.
Brachysynodontis, Synodontis, Pseudosynodontis, Hemisynodontis, Leiosynodontis, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 52.

Adipose fin of moderate length, or rather long; dorsal with a strong spine and with seven soft rays; anal rather short. Teeth in the lower jaw moveable, very thin at the base, and with a slightly dilated, pointed, brown apex; palate edentulous. Mouth small, mandibles short. Barbels six, more or less fringed with a membrane or with filaments. Eyes of moderate size. Neck with broad dermal bones. The gill-openings are of moderate width. Ventrals with seven rays, inserted behind the dorsal.

Tropical Africa.

Knowing most of the species of *Synodontis* from autopsy, I cannot adopt the views of Dr. Bleeker, who has split this natural generic group into five divisions:—

a. Synodontis has been restricted by him to a species with long, slender intermaxillary teeth and with ciliated maxillary barbels (*S. macrodon*). The discovery of a new species (*S. sorex*) already shows that the characters used for the foundation of this genus are unserviceable: either it must lose one of the characters on which it is based, or *S. sorex* would become the type of a sixth genus.

b. Pseudosynodontis is created for *S. serratus*, a species most closely allied to *S. schal*, which, however, is referred to *Hemisynodontis*. Although I am fully convinced of the distinctness of the two species, I confess that, seeing the great variations in the development of the spine of *S. schal*, I at first entertained some doubts about it, nor did I feel satisfied on this point until I had ascertained by dissection that the one was not the male sex of the other. If these be considered types of two genera, then we may similarly separate the short- and long-snouted Eels of our rivers.

c. Hemisynodontis is created for *S. membranaceus*, *S. schal*, and *S. nigritus*. According to Dr. Bleeker's views, this is an assemblage of most heterogeneous fishes,—the *S. membranaceus* differing from the others by a great extent of the gill-opening, and by a structure of the maxillary barbels, which is at least of as much importance as the "*cirri fimbriati*" of *Synodontis*, Blkr.

d. Leiosynodontis is founded on *S. maculosus*, the *young* of *Hemisynodontis schal.*

e. Brachysynodontis is created for *S. batensoda*, Rüpp., a *synonym* of *Hemisynodontis membranaceus*, and founded on two characters, viz., bipartite maxillary barbels and a slight denticulation of the end of the operculum. The peculiarity of the former is nothing more than the basal dilatation which may be seen in other Synodontes, and the latter character disappears entirely in mature examples.

We divide the species of this genus into the following divisions:—

I. The gill-opening does not extend downwards beyond the root of the pectorals.
  A. Mandibulary teeth very slender, longer than the eye, p. 211.
  B. Mandibulary teeth not longer than the eye, p. 212.
II. The gill-opening extends downwards to the throat, p. 215.

I. The gill-opening does not extend downwards beyond the root of the pectorals.

A. Mandibulary teeth very slender, longer than the eye.

1 **Synodontis sorex.**

D. 1/7. A. 12. P. 1/9. V. 7.

The gill-opening extends downwards to before the root of the pectoral fin; snout produced, pointed; mandibulary teeth very long and slender, as long as the eye, from six to eight in number. Maxillary barbels half as long as the head, lined interiorly with a narrow white membrane; the outer mandibulary barbels two-thirds as long as those of the maxillæ, provided with filaments. The height of the body is rather less than one-fourth of the total length (without caudal), the length of the head two-sevenths. Dorsal and pectoral spines slightly crenulated along their outer margins; humeral process as high as long. The first ray of the dorsal and pectoral fins produced. The adipose fin commences at a short distance from the dorsal, its length being contained thrice and a third in the total (without caudal). Caudal fin deeply forked, both lobes being prolonged; the upper is the longer, one-third, or more than one-third, of the total length. Coloration uniform: a black band along each caudal lobe; a blackish spot at the base of the hinder half of the dorsal fin.

Upper Nile.

a, b. Fine specimens (10 inches long). Chartoum. From Consul Petherick's Collection.

2. **Synodontis macrodon.**

Silurus clarias, *Hasselq. It. Pal.* p. 369.
—— callarias, part., *Bl. Schn.* p. 379.
Pimelodus synodontis, *Geoffr. Descr. Eg. Poiss.* pl. 12. figs. 5 & 6.
Synodontis macrodon, *Is. Geoffr. Poiss. Nil*, p. 156; *Cuv. & Val.* xv. p. 252.

B. 7 D. 1/7. A. 13. P. 1/8. V. 7.

The gill-opening extends downwards to before the root of the pectoral fin; mandibulary teeth very long and slender, nearly as long as the eye. Maxillary barbels about as long as the head, provided with long fringes. Dorsal and pectoral spines serrated along both edges; humeral process not much longer than high.

Nile.

a. Eight and a half inches long. Presented by Dr. E. Rüppell.

This specimen differs in some respects from those collected by Geoffroy St.-Hilaire: the length of its dorsal spine is two-fifths of the total (without caudal), whilst it is one-fourth in the specimens collected by the French naturalist; the caudal lobes also are considerably longer.

3. Synodontis serratus.

Rüppell, Beschreib. neuer Nil-fische, p. 8. taf. 2.

D. 1/7. A. 12–13. P. 1/9. V. 7.

The gill-opening extends downwards to before the root of the pectoral fin; mandibulary teeth rather numerous; much shorter than the eye, in a narrow band. Maxillary barbels longer than the head, lined with a narrow membrane interiorly. Dorsal spine longer than the head (in adult specimens), serrated along both edges. Humeral process longer than high, pointed behind. Dorsal and pectoral spines and the upper caudal lobe produced into filaments. Uniformly coloured; young dotted with brown.

Upper Nile.

a, *b*, *c*. Adult (22 inches long) and young. Chartoum. From Consul Petherick's Collection.

B. Mandibulary teeth not longer than the eye.

4. Synodontis schal.

Sonnini, Voy. Eg. ii. p. 279. tab. 21. fig. 2.
Silurus schall, *Bl. Schn.* p. 385.
Pimelodus clarias, *Geoffr. Descr. Eg. Poiss.* pl. 13. figs. 3 & 4.
Synodontis arabi, *Cuv. & Val.* xv. p. 261; *Hyrtl, Denkschr. Acad. Wiss. Wien*, 1859, xvi. p. 16.
—— schal, *Hyrtl, l. c.*
—— maculosus, *Rüppell, Beschreib. neuer Nil-fische*, p. 10. taf. 3. fig. 1 (young).

D. 1/7. A. 12–13. P. 1/8. V. 7. Vert. $\frac{9-10}{26-25}$.

The gill-opening extends downwards to before the root of the pectoral fin· mandibulary teeth rather numerous, much shorter than the eye. in a narrow band. Maxillary barbels longer than the head, not fringed. Pectoral spine stronger and rather longer than that of the dorsal fin, the latter being not serrated in front, and not much longer than the head. Humeral process much longer than high, pointed behind. The distance between dorsal and adipose fins is much less than the length of the base of the former. Old and half-grown specimens of uniform coloration, young ones irregularly spotted and banded with brown.

Nile; Senegal; Zambesi.

a–b. Fine specimens. Lower Nile. From Consul Petherick's Collection.
c–d. Half-grown. Lower Nile.
e, f–i. Young. Lower Nile. Presented by Dr. E. Rüppell as *S. maculosus*.
k, l, m–o. Adult (20 inches) and young. Chartoum. From Consul Petherick's Collection.
p. Half-grown. Senegal.
q–r. Young. West Africa. Purchased of Mr. Stevens.
s–t. Young. River Rovuma. Presented by Dr. Livingstone.
u. Half-grown.
v. Adult female: skeleton. Chartoum. From Consul Petherick's Collection.

5. **Synodontis nebulosus.**

Peters, MS.

B. 6. D. 1/7. A. 13. P. $\frac{1}{8-9}$. V. 7.

Maxillary barbels simple; skin of the body smooth. "Dentibus velutinis inferioribus nullis; dentes flexibiles minus numerosi (18), longiores, fortiores." The ventrals occupy the middle between the pectorals and the anal. Body and fins with black spots. (*Pet.*)

Mozambique.

6. **Synodontis omias.**

D. 1/7. A. 11. P. 1/8. V. 7. Vert. 10/23.

The gill-opening extends downwards to before the root of the pectoral fin. Mandibulary teeth rather numerous, much shorter than the eye, in a narrow band. Maxillary barbels longer than the head. Nuchal carapace tectiform; humeral process considerably longer than high, extending backwards to below the base of the dorsal spine; it is armed with a series of three or four compressed, triangular spinous processes, running along the lower margin of the bone, the last being placed at its extremity. Dorsal spine considerably longer than the head, serrated behind, but nearly smooth in front, there being only a few obsolete denticulations towards its point. Pectoral spine strongly serrated along both edges, rather stronger than, but not quite so long as, that of the dorsal fin. The distance between dorsal and adipose fins is less than the length of the base of the former. Adipose fin somewhat elevated, longer than the head.

West Africa.

a. Skeleton (14 inches long). Purchased of Mr. Dalton.

The soft parts having been preserved to some extent, I have been enabled to point out the specific characters of this species, which, moreover, is distinguished by the spines of the humeral process.

7. Synodontis nigritus.

Cuv. & Val. xv. p. 265. pl. 441.

D. 1/7. A. 14. P. 1/7. V. 7.

Mandibulary teeth not elongate. Maxillary barbels as long as the head, not fringed. Nuchal carapace twice as broad as long, with a long process behind, extending nearly along the whole of each side of the base of the dorsal; humeral process very long, pointed behind. The distance between dorsal and adipose fins is much more than the length of the base of the former. (*Val.*)

Senegal.

8. Synodontis humeratus.

Cuv. & Val. xv. p. 264.

Maxillary barbels not fringed. Dorsal spine serrated in front. The humeral process is exceedingly long, extending further backwards than the nuchal cuirass. (*Val.*)

Nile.

Known from a figure only.

9. Synodontis gambiensis.

D. 1/7. A. 12. P. 1/9. V. 7.

The gill-opening extends downwards to before the root of the pectoral fin. Mandibulary teeth much shorter than the eye, in a narrow band. Maxillary barbels much longer than the head, not fringed; the outer mandibulary barbels not much shorter than the head, provided with filaments. The height of the body is one-fourth of the total length (without caudal), the length of the head two-ninths. Nuchal carapace tectiform, much longer than broad. Dorsal spine rather longer than the head, smooth in front, slightly serrated behind; pectoral spine serrated along both edges, scarcely longer than that of the dorsal fin; humeral process longer than high, pointed behind. The distance between dorsal and adipose fins equals the length of the base of the former; the length of the adipose fin is contained thrice and two-thirds in the total (without caudal). Coloration uniform.

Gambia.

a. Eleven inches long: not good state. Presented by the Earl of Derby.

10. Synodontis zambesensis.

Peters, MS.

B. 7. D. 1/7. A. 13–14. P. 1/8–10. V. 7.

Maxillary barbels simple. Adipose fin short. "Dentes mandibulæ flexiles numerosi (40); dentes mandibulæ velutini distincti." Dorsal spine smooth in front; ventral fins a little more distant from the pectorals than from the anal. Skin of the body smooth. Coloration uniform. (*Pet.*)

Zambesi.

11. Synodontis xiphias.

D. 1/7. A. 11. P. 1/10. V. 7.

The upper jaw terminates in a long, conical pointed process, the length of which is two-ninths of that of the head. The height of the body is two-ninths of the total length (without caudal), the length of the head one-third. The gill-opening extends downwards to before the root of the pectoral fin. The intermaxillary teeth form a broad band; the mandible has two sets of different teeth: anteriorly a short series of small flexible teeth, and posteriorly on each side a minute patch of villiform teeth. The maxillary barbels extend somewhat beyond the end of the head, and are slightly compressed, but not dilated; the outer mandibulary barbels reach to the base of the pectoral, and are provided with filaments. Nuchal carapace coarsely granulated, tectiform, considerably longer than broad. Dorsal spine very strong, much compressed, as high as the body, granulated in front, serrated behind, and striated on the side. Pectoral spine serrated along both edges, shorter than that of the dorsal fin; humeral process more than twice as long as broad, pointed behind, the point being slightly directed upwards. The distance between dorsal and adipose fins is much more than the length of the base of the former. The length of the adipose fin is one-fourth of the total (without caudal). Caudal deeply forked. Small round brown spots are visible on the head and on the adipose fin.

West Africa.

a. Twenty-eight inches long: stuffed. Purchased of Mr. Dalton.

II. The gill-opening extends downwards to the throat.

12. Synodontis membranaceus.

Pimelodus membranaceus, *Geoffr. Descr. Eg. Poiss.* pl. 13. figs. 1 & 2.
Synodontis membranaceus, *Is. Geoffr. Poiss. Nil*, p. 160; *Cuv. & Val.* xv. p. 258.
—— batensoda, *Rüppell, Fortsetz. Beschreib. neuer Nil-fische*, p. 6. taf. 3. fig. 2 (barbels not good).

D. 1/7. A. 12. P. 1/9. V. 7.

The gill-opening extends downwards nearly to the middle of the throat; mandibulary teeth very short and small, forming a minute patch. Maxillary barbels shorter than the head, lined with a very broad black membrane. Dorsal spine not serrated in front; humeral process as long as high. The adipose fin commences immediately behind the dorsal. Belly black.

Upper Nile.

a–b. Fine specimens, 20 inches long. Chartoum. From Consul Petherick's Collection.

c. Young. Chartoum. From Consul Petherick's Collection.

Eleventh Group. RHINOGLANINA.

Stenobranchiate Siluroids with the anterior and posterior nostrils close together.

Central Africa; Bengal.

84. RHINOGLANIS.

Two dorsal fins, both composed of rays, the first with a strong spine; anal rather short. Teeth in both jaws minute; palate edentulous; mouth transverse, of moderate width, mandibles well developed. Barbels six, not compressed. Eyes free, of moderate size; the posterior nostril very large, open. Neck with broad dermal bones. Gill-openings rather narrow, not extending downwards beyond the root of the pectoral. Ventrals with seven rays, inserted below the posterior rays of the first dorsal fin.

Upper Nile.

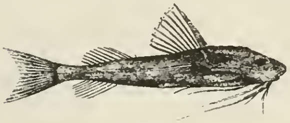
I am obliged to establish this genus, on a single very small example. Its most characteristic feature would appear to be the presence of a rayed dorsal fin where we should expect an adipose. However, we must not forget that there are Siluroids in which an apparently adipose fin has rays in its interior; and consequently the question arises whether this fin, in our fish also, may not change with age. It is proved by other characters that *Rhinoglanis* is not the young of any known Siluroid. The genus is somewhat allied to *Synodontis*, but differs, besides the characters mentioned, in the structure of the barbels, in the position of the ventrals, and apparently in the dentition.

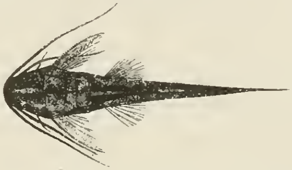
One might ask why this genus is not referred to the next subfamily, with which it appears to agree in the position of the ventrals. But, in fact, the real position of these fins is scarcely different from that in the Synodontes, the dorsal fin extending a little more backwards on the back, and having more rays than are found in the Doradina. It is possible also that with age the ventral fins really take a more backward position. Moreover, there is no trace of the reverted flap-like lower lip which is so characteristic of the greater part of the following subfamily. We may conclude, from analogy, that *Rhinoglanis* has a large anterior vertebra.

1. Rhinoglanis typus.

D. $\frac{1}{8}|9$. A. 10. P. 1/6. V. 7.

The head is nearly as broad as high, and its length is somewhat more than the height of the body, two-ninths of the total (without caudal); it is entirely osseous above, with a deep and broad longitudinal groove on the forehead. The snout is obtusely rounded in front, and rather longer than the diameter of the eye, which is two-sevenths of the length of the head, and equal to the width of the interorbital space. The maxillary barbel extends nearly to the origin of the second dorsal; the mandibulary barbels are inserted close to the anterior margin of the mandible, the outer ones extending to the root of the ventrals, the inner ones being somewhat shorter, and provided with two or three additional filaments. The entire neck is cuirassed, the cuirass being composed of three transverse pieces; the lateral margins of the nuchal cuirass are nearly parallel. Humerus with a long, slender process, which extends nearly as far backwards as the nuchal shield. Dorsal spine slightly serrated in front and as long as the head; the pectoral spine is strongly serrated interiorly, stronger and longer than that of the dorsal fin, and extending beyond the root of the ventral. The second dorsal fin has a rounded upper margin, commencing before and terminating behind the anal. Caudal forked. Body immaculate.





Upper Nile.

a. One and a half inch long. Gondokoro. From Consul Petherick's Collection.

A genus which appears to be closely allied to *Rhinoglanis* has been discovered by M. de Joannis. Unfortunately, Valenciennes has not taken any notice of it, so that we are obliged to give an abstract from the notes published by the collector.

85. MOCHOCUS.

Mochokus, *Joannis, Guér. Mag. Zool.* 1835.

Two dorsal fins, both composed of rays, the first with a strong spine; anal short. Teeth in the upper jaw only, in a single series. Mouth of moderate width; barbels six, thin. Eyes of moderate size. Neck covered with soft skin. Gill-openings rather narrow. Ventrals six-rayed, inserted immediately behind the dorsal.

Nile.

1. Mochocus niloticus.

Joannis, l. c. pl. 8.

D. $\frac{1}{5} \mid 10$. A. 8. P. 1/3. V. 6.

The length of the head is two-ninths of the total (without caudal). Barbels subequal in length, scarcely longer than the head. Dorsal spine longer than the head, but only two-thirds as long as the spine of the pectoral fin, which is exceedingly strong. Head, body, the second dorsal, and the caudal with brownish-black spots. (*Joannis.*)

Nile, near Thebes.

Only 18 lines long.

86. CALLOMYSTAX.

Two dorsal fins the anterior with a strong spine, the posterior adipose; anal rather short. Teeth in both jaws minute; palate edentulous; mouth small, transverse, at the lower side of the snout, the intermaxillaries and mandibularies being short, small. Barbels eight: those of the maxillaries are osseous to some extent, and provided with a broad basal membrane; nasal barbels short, attached to the flap covering the posterior nostril; two pairs of mandibulary barbels inserted in a transverse series immediately behind the margin of the lower lip. Anterior and posterior nostrils close together. Eyes of moderate size, without free orbital margin. The upper side of the head with longitudinal ridges, which are covered with thin skin. Gill-openings of moderate width, the gill-membranes being confluent with the skin of the isthmus. Ventrals six-rayed, inserted behind the dorsal.

Bengal.

1. Callomystax gagata.

Pimelodus gagata, *Ham. Buch. Fish. Gang.* pp. 197, 379. pl. 39. fig. 65.
Gagata typus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 90 *

B. 6. D. 1/6. A. 15. P. 1/9. V. 6.

Head and body compressed; the height of the body is two-sevenths of the total length (without caudal), the length of the head two-ninths; head higher than broad, with the upper profile convex and with the snout subconical. The occipital process is narrow, and extends nearly to the basal bone of the dorsal spine; the fonticulus on the upper side of the head is uninterruptedly continued along the whole length of the occipital process; eye lateral, in the middle, and one-fifth of the length, of the head. Nasal barbels very small; the maxillary barbels extend to the end of the head, the outer ones of the mandible to the gill-opening. The gill-opening extends downwards to the throat, and is separate from the other by a rather narrow isthmus. Dorsal fin high; its spine is as long as the head, serrated in front, and entire behind. Adipose fin as long as dorsal; caudal deeply forked. Pectoral spine as strong and nearly as long as that of the dorsal fin. All the fins black with whitish base, except the caudal, which is whitish. Young specimens with oblique blackish bands across the back, and the dorsal and caudal fins.

Ganges.

a–e. Types of the species. Presented by G. R. Waterhouse, Esq.

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* Dr. v. Bleeker does not appear to have been acquainted with this fish, so that not only the characters of the genus which he proposed for it are incorrect, but it is also improperly referred to the "Phalanx" of *Arii*, and to the "Stirps" of *Bagrini*.

Twelfth Group. MALAPTERURINA.

Stenobranchiate Siluroids without rayed dorsal fin. The anterior and posterior nostrils are remote from each other.

Tropical Africa.

That this group belongs to this subfamily, and not to the following, is proved by the rudimentary interneural spine, which rests in the cleft of the neural process of the first vertebra, and clearly shows that if the dorsal fin had been developed, it would have been quite on the fore part of the trunk, far in advance of the ventral fins. This rudimentary interneural spine was first discovered by Hyrtl (Denkschr. Acad. Wiss. Wien, 1859, xvi. p. 11).

87. MALAPTERURUS.

Malapterurus, *Lacép.* v. p. 90.

Only one dorsal fin, which is adipose, and situated before the caudal; anal of moderate length or short; caudal rounded; ventrals six-rayed, inserted somewhat behind the middle of the body; pectorals without pungent spine. Barbels six: one to each maxillary, and two on each side of the mandible. Both jaws with bands of villiform teeth; palate edentulous. The entire head and body covered with soft skin. Eyes small. Gill-opening very narrow, reduced to a slit before the pectoral. An electric organ extends over the whole body, and is situated between two aponeurotic membranes below the external integument.

Rivers of tropical Africa.

1. Malapterurus electricus.

Torpedo, *Purchas, Pilgrimes,* ii. pp. 1183, 1546, 1568.
Raja torpedo, *Forsk. Faun. Arab.* p. 15.
Silurus electricus, *L. Gm.* i. p. 1354; *Brouss. Mém. Acad. Sc.* 1782, p. 692. tab. 62, and *Journ. de Phys.* xxvii. p. 143; *Bl. Schn.* p. 384.
Malapterurus electricus, *Lacép.* v. p. 91; *Geoffr. St.-Hil. Ann. Mus.* 1802, i. p. 392. pl. 26, and *Descr. Eg. Poiss.* pl. 12; *Rudolphi, Abhandl. Berl. Acad.* 1824, p. 137; *Joannis, in Guér. Mag. Zool.* 1835, tab. 1 (bad); *Cuv. & Val.* xv. p. 518. pl. 455; *Valenc. in Ann. Sc. Nat.* 1840, 2 sér. xiv. p. 241, and *Arch. Mus.* 1841, ii. p. 43; *Cuv. Règne Anim. Ill. Poiss.* pl. 99; *Peters, in Müll. Arch. Anat.* 1845, p. 375; *Pacini, in Nuov. Ann. Sc. Nat. Bologn.* 1846, 2 ser. vi. p. 41; *Bilharz, das electrische Organ des Zitterwelses* (*Leipzig,* 1857, fol.); *Schultze, zur Kenntniss der electrischen Organe der Fische* (*Halle,* 1858, 4to).

A. 10–13. Eye rather small, its diameter being a little less than one-third of its distance from the upper end of the gill-opening. The length of the head is contained four times and a third in the total (without caudal). Jaws equal in front. The outer mandibulary barbels extend to the root of the pectoral. Body with more or less numerous small roundish black spots, a part of which are sometimes confluent into larger irregular patches; anal and caudal fins with a white margin. Vert. 17/22.

Nile. Rivers of the west coast of Africa.

a. Adult. Egypt. From Dr. Rüppell's Collection.
b, c–d. Adult and half-grown. Chartoum. From Consul Petherick's Collection.
e, f. Adult and half-grown. West coast of Africa.
g. Adult: skeleton. Nile. From Dr. Rüppell's Collection.

2. Malapterurus beninensis.

Murray, Edinb. New Philos. Journ. new series, 1855, ii. p. 49. pl. 2; *Clelland, ibid.* 1858, viii. p. 177. pls. 1 & 2.

A. 9. Eye very small, its diameter being one-fourth of its distance from the upper end of the gill-opening. The length of the head is contained five times and a half or five times and a third in the total (without caudal). The lower jaw slightly prominent. The outer mandibulary barbels extend to, or beyond, the root of the pectoral. Sides of the body with a few small round black spots. Young specimens with a broad black cross-band at the root of the caudal; it is separated by a whitish band from another black one descending from the origin of the adipose fin; anal without white margin. Old specimens nearly entirely uniform black. Vert. 19/21.

Old Calabar.

a, b, c, d, e, f–g. Adult, half-grown, and young.—Types of the species.

3. Malapterurus affinis.

A. 10. C. 16–17. P. 7–8. V. 6.

Closely allied to *M. beninensis*, but with a longer head, the length of which is contained four times and a quarter in the total (without caudal). Eye small, its diameter being one-third or one-fifth of its distance from the upper end of the gill-opening. Jaws subequal anteriorly. The maxillary barbels extend to, the outer ones of the mandible beyond, the gill-opening. Anal fin somewhat longer than high, or as long as high; caudal as long as the head; adipose fin as long as anal. Uniform lead-coloured above, whitish below; caudal with an indistinct whitish margin.

Old Calabar.

a. Seven inches long. Presented by W. Carruthers, Esq.
b. Nine and a half inches long.

Sixth Subfamily.
SILURIDÆ PROTEROPODES.

The rayed dorsal fin is always present and rather short; the ventrals are inserted below (in all the genera, except *Acestra*), or in front of, the dorsal (*Acestra*). The gill-membranes are confluent with the skin of the isthmus, the gill-opening being reduced to a short slit. Pectorals and ventrals horizontal. Vent before, or not much behind, the middle of the length of the body.

Thirteenth Group. HYPOSTOMATINA.

Proteropodal Siluroids with the anterior and posterior nostrils close together, and generally with a short flap between them. The lower lip is reverted and much dilated, forming a broad flap more or less deeply notched in the middle.

The union of apparently such different genera as *Arges*, *Callichthys*, *Loricaria*, &c., is so opposed to the views of former ichthyologists, that it will be necessary to add a few words in explanation. The mailed body of the Loricariæ and Hypostomes, reflected in some way internally by the skeleton, is a very striking character: so much so. that Kner is inclined to separate them from the Siluroids altogether, and Bleeker forms of them his first Siluroid family. However, that the development of dermal scutes is not a character of so much value, is not only proved by *Doras*, where similar dermal productions cover a part of the lateral line, and by the numerous modifications of the dermal carapace on and behind the occiput, but especially by the Indian genus *Sisor*, which has a series of dorsal plates, the sides being almost naked. With regard to the skeleton, the compression of the caudal vertebræ and the dilatation of their neural portion are not only found in *Loricaria* and *Hypostomus*, but also in other slender-tailed Siluroids, as *Sisor*, *Bunocephalus*, and *Aspredo*, genera which we associate with the former, but which are excluded from the Loricaroids of Kner and Bleeker.

Every doubt that *Loricaria* and the genera allied to it are true Siluroids, and nothing but Siluroids, must disappear when they are compared with those with which they have been associated by myself. There we find the gill-opening reduced to a foramen or short slit, in consequence of the gill-membranes being confluent with the skin of the broad isthmus; the nasal openings placed close together in a small groove; the ventrals inserted far forwards, below, or even in front of, the short dorsal; the pectorals and ventrals horizontal; a short anal; the remarkable development of the lower lip; and, finally, the anterior vertebræ never coalescent into one large one, the first being somewhat larger than the others, and provided with large transverse processes. A combination of such characters indicates a natural affinity even when we consider other points as being of minor importance, such as the spiny covering of the first ray of the fins of *Arges, Stygogenes*, &c., which is identical with the spiny armature of the Hypostomes and of some Loricariæ; the spinous adipose fin of *Stygogenes*; the size of the mature eggs, which is equal in *Arges* and *Loricaria*; &c. Thus, I consider *Arges* as a naked *Loricaria*, or, *vice versâ, Loricaria* as a mailed *Arges*; and although these forms are sufficiently diversified to admit of further subdivision, it is a most artificial method, by which their natural union is destroyed.

a. Head and body entirely covered with soft skin; maxillary barbels only: *Argina*.

88. ARGES.

Arges, *Cuv. & Val.* xv. p. 333.

Adipose fin low, elongate; dorsal short, without pungent spine; anal short. Teeth small, slightly curved, notched at the apex, forming a narrow band in each jaw; palate toothless; cleft of the mouth of moderate width, with a maxillary barbel on each side; a short, broad flap on each side between the nostrils; lower lip very broad, pendent. Eyes small, covered with transparent skin. Head covered with soft skin. Gill-openings not extending downwards to the throat, separated by a broad isthmus. Ventrals six-rayed, inserted below the dorsal.

Andes.

1. Arges sabalo.

Cuv. & Val. xv. p. 335. pl. 444.

B. 4. D. 1/6. A. 1/6. P. 1/12. V. 6.

The length of the head is one-fourth of the total*; the eyes are situated at the end of the second third of the length of the head; nostrils in the middle between the eye and the end of the snout. Ventral fins somewhat in advance of the dorsal, below the posterior third of the pectorals. Brownish, marbled with blackish above. (*Val.*)

Andes of Peru.

2. Arges brachycephalus.

Günth. Proc. Zool. Soc. 1859, p. 92.

B. 4. D. 1/6. A. 6. P. 1/9. V. 6. Vert. 13/16.

The length of the head is one-fifth of the total; the eyes are situated nearly in the middle of the length of the head; the nostrils are much nearer to the extremity of the snout than to the orbit: ventral fins inserted just below the extremity of the pectoral, in the vertical from the origin of the dorsal. Brown, dotted with black.

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* One-fifth according to the figure.

Andes of Western Ecuador.

a–d. From Mr. Fraser's Collection.

89. STYGOGENES.

Adipose fin short (with or without a spine); dorsal and anal short; the outer fin-rays somewhat thickened and rough. Teeth small, slightly curved, notched at the apex, forming a narrow band in each jaw; palate toothless; cleft of the mouth of moderate width, with a maxillary barbel on each side; a short broad flap on each side between the nostrils; lower lip very broad, pendent. Eyes small, covered with transparent skin. Head covered with soft skin. Gill-openings not extending downwards to the throat, separated by a broad isthmus. Ventrals six-rayed, inserted below the dorsal.

I establish this genus on a few very small fishes collected by the late Madame Pfeiffer, and evidently very similar to the *Pimelodus cyclopum* of Humboldt. Indeed it is possible that they belong to that species, which is so much coveted by zoologists, and the history of which is still veiled in obscurity. The descriptions by Humboldt are extremely vague, and want the precision and detail requisite for the determination of species; and the figures illustrating them are below mediocrity, conveying little more than the general size and shape. Therefore, when Valenciennes (xv. p. 326) extols the exactness of the figures and descriptions of the fishes discovered by Humboldt, we must consider it as a tribute to the "tendre amitié que M. de Humboldt a pour moi," &c., rather than as consistent with fact.

The most important difference between our specimens and the *Pimelodus cyclopum* is in the structure of the adipose fin, which is supported by a small, stiff, rough spine in our specimens, as in *Hypostomus*. No such spine is visible in the figure given by Humboldt. But I would not affirm that this is really a specific difference, as it may have been overlooked by him. In other respects the fishes agree, as far as we can judge from the monstrous figure.

Madame Pfeiffer was not very accurate with regard to the localities whence she obtained the species which she collected. Thus, our specimens are marked as being from the Azores; of course it is much more probable that she obtained them during her travels in the Andes; perhaps she had some knowledge of the celebrated fish of Humboldt, and inquired for it.

It remains doubtful, therefore, whether our specimens are identical with *Pimelodus cyclopum* or not. The error of describing them as distinct will be less than that of confounding them. If they be distinct, we should consider the new species as the type of the genus.

1. Stygogenes humboldtii.

B. 4. D. 6–1. A. 6. C. 13. P. 8. V. 6.

In general form very similar to *Arges*. The head is as broad as long, its length being two-ninths of the total (without caudal); the eyes are very small, directed upwards, situated in the middle of the length of the head. The mouth is situated at the lower side of the snout; a barbel, half as long as the head. at each angle of the mouth. Teeth in a narrow band in each jaw; those of the outer series in the upper jaw are narrow and not notched, whilst the hinder ones have a distinct notch; mandibulary teeth broader than the upper ones, notched. The labial fold is emarginate behind. The outer ray of each fin is thickened, flexible, slightly prolonged, and provided with small spines directed backwards; the outer pectoral and ventral rays subequal in length, the former extending nearly to the second third of the length of the ventral fin; the origin of the dorsal is somewhat posterior to that of the ventral. Ray of the second dorsal fin one-fourth as long as the head.

a–d. Two inches long. From the Collection of Madame I. Pfeiffer.

2. Stygogenes cyclopum.

Pimelodus cyclopum, *Humb. Observ. Zool.* i. p. 21. pl. 6.
Arges cyclopum, *Cuv. & Val.* xv. p. 340.

B. 4. D. 6. A. 7. C. 12. P. 9. V. 5.

Adipose fin small, without ray.

Subterranean waters in the Andes of Quito.

90. BRONTES.

Brontes, *Cuv. & Val.* xv. p. 341.

Adipose fin none; dorsal and anal short, without pungent spine. Teeth small, slightly curved, notched at the apex, forming a narrow band in each jaw; palate toothless; cleft of the mouth rather narrow, with a maxillary barbel on each side; a short broad flap before the posterior nostril, which is close to the anterior; lower lip very broad, pendent. Eyes minute. Head covered with soft skin. Gill-openings separated by a broad isthmus. Ventrals six-rayed, inserted below the end of the dorsal.

Andes.

1. Brontes prenadilla.

Cuv. & Val. xv. p. 343. pl. 445.

B. 4. D. 7. A. 7. P. 7. V. 6.

Upper lip thick, prominent; barbels slender, shorter than the head; caudal rounded. Coloration uniform. (*Val.*)

This small species is found in rivulets descending the Cotopaxi, and is one of those which are said to be ejected by volcanic action.

91. ASTROBLEPUS.

Astroblepus, *Humboldt, Observ. Zool.* i. p. 19.

Adipose fin none; dorsal and anal short, without pungent spine; ventral fins absent. Dorsal situated in the anterior half of the height of the body. Teeth small; palate (probably) toothless; cleft of the mouth of moderate width, with a maxillary barbel on each side Eyes very small. Head covered with soft skin.

Andes.

1. Astroblepus grixalvii.

Humboldt, l. c. pl. 7.

B. 4. D. 7. A. 7. P. 10.

The outer ray of each fin prolonged into a filament. Lips thick, the upper with folds. Uniform blackish olive. (*Humb.*)

Rio de Palace, near Popayan.

No specimen is known to exist in a European collection.

b. Body completely cuirassed: *Loricarina.*

92. CALLICHTHYS*.

Callichthys, *L. Amœn. Acad.* i. p. 317; *Cuv. & Val.* xv. p. 294.
Callichthys, Hoplosternum, et Hoplosoma (*Swains.*), *Gill.*
Callichthys, Hoplosternum, et Corydoras (*Lacép.*), *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 82.

Adipose fin short, supported anteriorly by a short moveable spine; dorsal with a feeble spine and seven or eight rays; anal short. Teeth minute or entirely absent; cleft of the mouth rather narrow, with a pair of maxillary barbels on each side, which are united at the base. Eyes small. Head covered with osseous plates; body entirely protected by two series of large imbricate shields on each side. Gill-openings of moderate width, separated by a broad isthmus. Ventrals six-rayed, inserted below the hind part of the dorsal fin.

Rivers of the tropical parts of the continent of South America flowing into the Atlantic; Trinidad.

The species of this genus may be divided into the following subgeneric groups:—

* Head depressed, broader than high; sides of the head without bristles: *Callichthys*, p. 226.

** Head depressed; sides of the head with bristles: *Scleromystax*, p. 229.

*** Head compressed; caudal deeply forked: *Corydoras*, Lacép., p. 229.

Kner has shown that the strength and length of the pectoral spines are not a specific character in this genus, the males having those spines stronger and longer than the females; in the latter they are sometimes serrated along the inner edge. Young males, again, have, comparatively, smaller spines than old ones. Several species have the lower (thoracic) portion of the humeral bones much dilated, and either entirely naked, or covered only with thin skin; these plates are larger in old males than in young ones and in females. In all the species a small space in the middle of the upper surface of the snout remains cutaneous, but it is larger, and open in front, in young individuals, whilst it is generally surrounded by bone in mature specimens.

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* 1. Callichthys exaratus, *Müll. & Trosch. in Schomb. Brit. Guian.* iii. p. 630.—British Guiana.
2. —— chiquitos, *Casteln. Anim. Amér. Sud, Poiss.* p. 38. pl. 18. fig. 2.—Chiquitos. The caudal fin is probably incorrectly drawn.
3. —— splendens, *Casteln. l. c.* p. 39. pl. 18. fig. 3.—Rio Tocantins.
4. —— taiosh, *Casteln. l. c.* pl. 19. fig. 1, from Chiquitos.—This fish is known from a figure only, and would be the type of a new genus if it be correctly drawn; the dorsal fin is composed of a strong spine and eleven soft rays.

* Head depressed, broader than high; sides of the head without bristles.

1. Callichthys asper.

Tamoata, *Marcgr. Hist. Bras.* p. 151; *Willughby, Ichthyol.* tab. N. 13. fig. 6.
Callichthys, *Linn. Amœn. Acad.* i. p. 317. tab. 14. fig. 1.
Cataphractus barbatus, *Klein, Miss.* iv. p. 43. no. 5.
Callichthys, sp., *Gronov. Mus. Ichth.* i. p. 27, and *Zoophyl.* no. 389.
Seba, iii. tab. 29. fig. 13.
Silurus callichthys, *Linn. Syst. Nat.* i. p. 506.
Cataphractus callichthys, *Bl.* taf. 377. fig. 1; *Bl. Schn.* p. 107.
Callichthys asper, *Quoy & Gaim. Voy. Uran. Zool.* p. 232; *Cuv. & Val.* xv. p. 302; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 107.
—— læviceps, *Cuv. & Val.* xv. p. 309.
—— loricatus, *Gronov. Syst. ed. Gray*, p. 157.

B. 4. D. $\frac{1}{8}\Big|$ 1. A. 1/6. P. 1/7. V. 6. Vert. 14/13–14.

No osseous shields between the pectoral fins; the lower parts naked. Twenty-eight lateral shields in the upper series, from twenty-six to twenty-seven in the lower. A broadish space along the back behind the dorsal fin is naked, but there is a strip of small scales extending forwards from the adipose fin. The shields below the adipose fin reach upwards nearly to its base. The barbels extend to behind the humeral process. Caudal fin rounded; pectoral spines covered with fine bristles. Fins with very small blackish specks.

Brazil and Guianas.

a, b, c. Many specimens. Bahia. From Dr. O. Wucherer's Collection.
d. Young. Para. Presented by R. Graham, Esq.
e, f. Half-grown. Brazil. Presented by Lord Stuart.
g. Adult: stuffed. Brazil. Presented by Mrs. Gragan.
h. Adult: skin. From Gronow's Collection.
i, k. Adult and half-grown.
l. Half-grown: stuffed.
m. Adult male: skeleton. Bahia. From Dr. O. Wucherer's Collection.

2. Callichthys affinis.

D. $\frac{1}{8}\Big|$ 1. A. 1/6. P. 1/7. V. 6.

Very closely allied to *C. asper*, but with a smaller number of lateral shields, of which there are only twenty-six in the upper series, and from twenty-four to twenty-five in the lower. A naked space on the back, with a strip of small scales before the adipose fin, as in *C. asper*. The shields below the adipose fin are separated from its base by a naked interspace. The barbels extend to, or nearly to, the middle of the humeral process. Caudal fin rounded; pectoral spines covered with fine bristles. Uniform dark greenish olive.

Rio Grande.

a–d. Adult and half-grown. Purchased of Mr. Stevens.

3. Callichthys knerii.

Gill, in Ann. Lyc. Nat. Hist. New York, 1858, vi. p. 394.

D. $\frac{1}{7} \mid 1$. A. 1/6. P. 1/7. V. 6.

No osseous shields between the pectoral fins, the lower parts being naked. Pectoral spines compressed, strongly serrated on their edge, their external side being beset with rather strong, recurved, tooth-like spines. Caudal rays barred with brownish black. (*Gill.*)

Trinidad.

4. Callichthys cælatus.

Cuv. & Val. xv. p. 308.

D. $\frac{1}{6} \mid 1$. A. 1/4. P. 1/7. V. 6.

No osseous shields between the pectoral fins, the lower parts being naked. Nuchal plates very large, interparietal and temporal plates with a transverse groove. Caudal fin rounded. Blackish green. (*Val.*)

Bahia.

5. Callichthys littoralis.

Callichthys littoralis, *Hancock, Zool. Journ.* 1829, iv. p. 244.
—— subulatus, *Cuv. & Val.* xv. p. 311.
—— lævigatus, *Valenc. in d'Orb. Voy. Amér. Mérid. Atl. Poiss.* pl. 5. fig. 2; *Cuv. & Val.* xv. p. 314; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 109.
—— albidus, *Cuv. & Val.* xv. p. 316.
Hoplosternum lævigatum, *Gill, in Ann. Lyc. Nat. Hist. New York*, 1858, vi. p. 396.
—— stevardii, *Gill, l. c.* p. 401.

D. $\frac{1}{8} \mid 1$. A. $\frac{1}{7}$. P. $\frac{1}{9\text{–}10}$. V. 6. Vert. 12–13/11.

A pair of large osseous shields, in old individuals covered with skin, between the pectoral fins. Twenty-four lateral shields in the upper series, and twenty-three in the lower; a series of about nine or twelve small azygos shields runs from the adipose fin nearly to the dorsal, separating the lateral shields of both sides. Infraorbital bone as wide as, or even wider than, the orbit in full-grown examples, but rather narrower in immature individuals. The barbels extend to, or nearly to, the end of the pectoral fin. Caudal fin slightly forked. Lower parts immaculate; caudal without cross-band.

Brazil; Guianas; Trinidad.

a. Half-grown. Demerara. Presented by Dr. Hancock.—Type of the species.
b, c. Adult. British Guiana. Presented by Sir R. Schomburgk.
d. Nest of the same, built of grasses.
e–h, i, k–l. Adult and half-grown. Demerara. Purchased of Mr. Scrivener.
m–n. Half-grown. Trinidad. Presented by — Taylor, Esq.
o–t. Adult: stuffed. South America.
u, v. Adult. From the Collection of the Zoological Society.
w. Adult: skeleton. Presented by the Royal College of Surgeons.

6. **Callichthys thoracatus.**

Cuv. & Val. xv. p. 309. pl. 443.

D. $\frac{1}{8} \big| 1$. A. $\frac{1}{6\text{–}7}$. P. 1/9. V. 6.

A pair of large osseous shields between the pectoral fins. Twenty-five lateral shields in the upper series, and twenty-three in the lower; five shields behind the dorsal fin join with the corresponding ones of the other side, without being separated by small azygos shields; a series of about five or six azygos shields before the adipose fin. Infraorbital bone very narrow, only half as wide as the orbit. The barbels extend to behind the end of the pectoral fin. Caudal fin subtruncated. Lower parts immaculate; fins blackish, the caudal with an indistinct broad dark cross-band.

Guianas; Trinidad; ? Martinique.

a. Adult. British Guiana. Presented by Sir R. Schomburgk.
b. Adult: stuffed. Trinidad. From the Collection of the Zoological Society.—Vernac. name: Cascadura, or Bush-fish.
c–d. Adult: skins.

7. **Callichthys longifilis.**

Callichthys longifilis, *Cuv. & Val.* xv. p. 317.
—— personatus, *Ranzani, Nov. Comm. Acad. Scient. Instit. Bonon.* 1842, v. p. 322. tab. 24.
—— pictus, *Müll. & Trosch. in Schomb. Brit. Guiana,* iii. p. 630.
? Callichthys sulcatus*, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 110.

D. $\frac{1}{8} \big| 1$. A. 7–8. P. $\frac{1}{8\text{–}9}$. V. 6.

A pair of large osseous shields between the pectoral fins. Twenty-four to twenty-five lateral shields in the upper series, and twenty-four in the lower; four shields behind the dorsal fin join with the corresponding ones of the other side, without being separated by small azygos shields; a series of about seven azygos shields before the adipose fin. Infraorbital bone very narrow, much narrower than the orbit. The barbels extend beyond the root of the ventral. Caudal fin rounded. The soft portions of the lower side with rounded deep-brown spots; dorsal and caudal fins with small black spots, the latter with a whitish band across its base and with a dark one across the middle.

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* All our specimens have a shallow groove in the humeral process for the reception of the pectoral fin, although in other respects they agree better with *C. longifilis* than with *C. sulcatus.*

Brazil; Guianas.

a–c. Fine specimens. British Guiana.
d. Adult. Surinam. Purchased of Mr. Frank.
e, f. Half-grown. River Cupai (Amazons). Purchased of Mr. Stevens.
g, h. Adult and half-grown.

** Head depressed; sides of the head with bristles.

8. Callichthys barbatus.

Quoy & Gaim. Voy. Uran. Zool. p. 234; *Cuv. & Val.* xv. p. 322.

D. $\frac{1}{7}\Big|$1. A. 7. P. 1/10. V. 6.

No osseous shields between the pectoral fins; sides of the head, between the præoperculum and the end of the snout, with stiff bristles; mouth very small, protractile; maxillary barbels reaching to the middle of the operculum; caudal forked. Twenty-five lateral shields in the upper series, and twenty-four in the lower; the shields behind the dorsal fin join with the corresponding ones of the other side; a series of five azygos shields before the adipose fin. Dorsal and anal fins with blackish spots.

Rio Janeiro.

*** Head compressed; caudal deeply forked.

9. Callichthys punctatus.

Cataphractus punctatus, *Bl.* taf. 377. fig. 2; *Bl. Schn.* p. 108.
Corydoras geoffroyi, *Lacép.* v. pp. 145, 146.
Callichthys punctatus, *d'Orb. Voy. Amér. Mérid. Atl. Ichth.* pl. 5. fig. 1; *Cuv. & Val.* xv. p. 318.

D. $\frac{1}{7}\Big|$1. A. 8. P. 1/9. V. 6.

Head compressed, as high as long, with its upper profile slightly curved. Maxillary barbels reaching to the gill-opening. Twenty-one or twenty-two lateral shields in the upper series, and twenty or twenty-one in the lower: there are three or four azygos shields before the adipose fin. Caudal fin forked. (Dorsal and anal fins with a broad black band; caudal with four black cross-bands, and with a black spot at its base.)

Surinam; Montevideo.

a–b. Young. Essequibo. From Mr. Ehrhardt's Collection.—These specimens differ somewhat in coloration: nearly the entire dorsal fin is black, and this colour also extends over some of the shields below the dorsal fin; anal and caudal colourless. A blackish vertical bar below the eye; body minutely punctulated with black.

10. Callichthys paleatus.

Callichthys paleatus, *Jenyns, Zool. Beagle, Fish.* p. 113.

$$D. \frac{1}{7} \Big| 1. \quad A. 6. \quad P. 1/7. \quad V. 6.$$

Head slightly compressed, its height being very little less than its length; the upper profile of the snout curved. Maxillary barbels reaching to beneath the middle of the eye; two short cirri, only half the length of the maxillary ones, pendent from the reflexed lower lip. Twenty-one lateral shields in the upper series, and twenty in the lower. Caudal fin forked. Yellowish brown, with dusky spots and mottlings; lower parts whitish. Dorsal and caudal spotted. (*Jenyns.*)

Hab. —— ?

11. Callichthys æneus.

Hoplosoma æneum, *Gill, in Ann. Lyc. Nat. Hist. New York*, 1858, vi. p. 403.

$$D. \frac{1}{7} \Big| 1. \quad A. \frac{1}{6}. \quad P. 1/7. \quad V. 6.$$

Very similar to *C. paleatus*, but all the fins immaculate.

Trinidad.

93. PLECOSTOMUS*.

Plecostomus, sp., *Artedi, in Seba*, iii. p. 87.
Hypostomus, *Lacép.* v. p. 144; *Kner, Hypostom.* p. 256.
Hypostomus, sp., *Cuv. & Val.* xv. p. 489.
Plecostomus et Pseudancistrus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 78.

A short adipose fin is present, being supported anteriorly by a short, compressed, curved spine; dorsal fin of moderate length, with eight rays, the first of which is simple, slightly thickened, flexible; anal fin short; ventral six-rayed, below the dorsal; pectoral with a strong spine. Head and body completely cuirassed, the lower parts being sometimes naked; body rather short, with four or five longitudinal series of large imbricate scutes on each side; tail not depressed. Snout produced, obtuse in front; mouth inferior, transverse, with a single series of generally very fine, bent teeth in both jaws; palate toothless. Interoperculum without erectile armature. Gill-opening very narrow.

Continent of tropical America.

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* 1. Hypostomus verres, *Cuv. & Val.* xv. p. 494.—Cayenne.

2. —— watwata, *Hancock, Zool. Journ.* iv. p. 246.—Demerara. This species has not more than eight dorsal rays, Hancock having used the old style of writing, $D. \frac{1}{8}$, which means that the fin is composed of eight rays, one of which is spinous. The typical specimen appears to be lost.

The species may be subdivided thus:—

- *a.* Teeth in both jaws very fine, numerous.
    - * Margin of the snout granulated, without bristles: *Plecostomus*, Blkr., p. 231.
    - ** Margin of the snout with short bristles, which become gradually longer posteriorly: *Pseudancistrus*, Blkr., p. 237.
- *β.* Both jaws with small teeth, few in number, much dilated at the crown: *Cochliodon*, Heck., p. 238.

a. Teeth in both jaws very fine, numerous.

* Margin of the snout granulated, without bristles.

1. **Plecostomus bicirrhosus.**

Loricaria plecostomus, *L. Syst. Nat.* i. p. 508; *Bl.* taf. 374; *Bl. Schn.* p. 124.
Plecostomus, *Gronov. Mus. Ichth.* i. p. 24. no. 67, and *Zoophyl.* no. 394. tab. 3. figs. 1 & 2.
Loricaria flava, *Shaw, Zool.* v. p. 38. pl. 101.
Hypostomus plecostomus, *Cuv. & Val.* xv. p. 489; *Kner, Hypostom.* p. 263.
Plecostomus bicirrhosus, *Gronov. Syst. ed. Gray*, p. 158.

D. 1/7. A. 5. P. 1/6. V. 1/5. L. lat. 26.

Head not much depressed, its length being two-sevenths of the total (without caudal); a rather prominent ridge runs from the eye to below the nostril, the side of the head below the ridge being slightly concave. Occiput with a rather elevated ridge, scutes of the nape bicarinate. Labial fold of moderate width, not notched behind, covered with minute papillæ*. Interoperculum with minute, very short setiform spines. Thorax and belly nearly entirely covered with minute scutes. The lower caudal lobe is considerably stronger than the upper; the upper and lower caudal rays are prolonged, and subequal in length. Head with numerous closely-set brown dots; body and fins with larger round spots, which are most distinct on the abdominal surface.

Brazil; Surinam; Venezuela.

a–c. Adult and half-grown. British Guiana.
d. Adult: stuffed. British Guiana.
e. Half-grown. Dutch Guiana. Purchased of Mr. Frank.
f. Half-grown. Cayenne.
g. Young. Para. Presented by R. Graham, Esq.
h. Half-grown: bad state. Purchased of Mr. Bartlett.
i. Adult. Purchased of Mr. Stevens.

2. **Plecostomus pantherinus.**

Kner, Hypostom. p. 267.

D. 1/7 A. 5. P. 1/6. L. lat. 24–25.

The length of the head is only one-third of the total (with the caudal); margin of the snout granulated, except in the middle of its extremity, where it is naked; a ridge runs from the upper angle of the orbit to below the nostril; occiput elevated, with two keels, each terminating in a point. The free margin of the interoperculum with small spines. Thorax and belly naked; scutes of the body keeled; there are twelve scutes between anal and caudal. The outer pectoral rays extend beyond the base of the ventrals, and are armed with bristles. A few scattered round spots on the head, body, and fins; they are smallest on the head. (*Kner.*)

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* The teeth vary in number; I count from sixteen to twenty-six in each mandible and intermaxillary in specimens from the same locality.

Rio Guaporé.

This species is known from a single example only; it is 3 inches long.

3. **Plecostomus horridus.**

Hypostomus horridus, *Kner, Hypostom.* p. 259. taf. 1.
?Hypostomus emarginatus, *Kner, Hypostom.* p. 260 (female?) (not *Cuv. & Val.*).

D. 1/7. A. 5. P. 1/6. L. lat. 27–28.

Head rather depressed, its length being a little less than one-fourth of the total (without caudal); occiput with a slight prominence. Eye of moderate size, its diameter being one-third of the width of the interorbital space. Interoperculum not armed. Throat, thorax, and belly covered with very small scutes. Dorsal fin rather higher than long, the length of its base being much less than its distance from the second dorsal. Caudal fin deeply emarginate, its outer rays being armed with long setiform curved spines, like the outer pectoral ray. The latter does not quite extend to the base of the ventral fin. Fifteen scutes between the anal and caudal fins. The lateral scutes of the body slightly keeled, each keel terminating in several small hooks. All parts with round black spots, those on the head being the smallest; there are two series of these spots in each interradial space of the dorsal fin. (*Kner.*)

Rio Guaporé.

4. **Plecostomus commersonii.**

Lacépède, v. pl. 4. fig. 2.
Hypostomus commersonii, *Valenc. in d'Orb. Voy. Amér. Sud, Poiss.* pl. 7. fig. 2 (not good); *Cuv. & Val.* xv. p. 495.
?Hypostomus commersonii, *Kner, Hypostom.* p. 262.
Hypostomus subcarinatus, *Casteln. Anim. Amér. Sud, Poiss.* p. 42. pl. 21. fig. 1.

D. 1/7. A. 5. P. 1/6. V. 1/5. L. lat. 30.

Head not much depressed, its length being two-sevenths of the total (without caudal); no ridge between eye and nostril; occiput with a rather elevated obtuse ridge; the median scutes of the nape elevated in the middle and obtusely bicarinate. The middle of the extremity of the snout is naked; labial fold of moderate width, not notched behind, covered with minute papillæ. Interoperculum without any spines. The entire lower side of the head, thorax, and belly covered with minute scutes. *The length of the base of the dorsal fin is more than its distance from the second fin.* There are eight scutes between the two fins. Caudal fin obliquely emarginate. The pectoral spine extends to the second third of the length of the ventral fin, and has its extremity covered with very short spines. Sixteen scutes between anal and caudal; the lateral scutes of the body with slightly serrated keels. Head, back, and fins with numerous brown dots; three or four irregular series of dots in each interradial space of the dorsal fin; caudal fin nearly uniform blackish.

Brazil.

a. Adult. Rio Grande. Purchased of Mr. Stevens.

5. **Plecostomus punctatus.**

?Hypostomus punctatus, *Cuv. & Val.* xv. p. 493.

D. 1/7. A. 5. P. 1/6. V. 1/5. L. lat. 31.

Head rather depressed, its length being one-fourth of the total (without caudal); no ridge between eye and nostril; superciliary edge not elevated; occiput with a slight longitudinal elevation along its middle, and somewhat produced backwards; nuchal scutes inconspicuously bicarinate. The middle of the extremity of the snout is naked; labial fold of moderate width, not notched behind, covered with minute papillæ. Interoperculum without any spines. The entire lower side of the head, thorax, and belly covered with minute scutes. *The length of the base of the dorsal is less than its distance from the second fin*; there are nine scutes between the two fins. Caudal fin obliquely emarginate. The pectoral spine extends somewhat beyond the base of the ventral, and has its hinder portion covered with small curved spines. Sixteen scutes between anal and caudal; the lateral scutes of the body with indistinct keels, each keel terminating in a bundle of very small spines. Head, back, and fins with numerous brown dots; they are arranged in two series between every pair of the dorsal rays, and in a single series between the caudal rays.

Brazil.

a. Adult. Brazil?

b. Adult: stuffed. South America.

6. **Plecostomus emarginatus.**

Cuv. & Val. xv. p. 500.

D. 1/7. A. 1/4. P. 1/6.

Body and tail rather elongate. The pectoral spines extend scarcely to the base of the ventral; scutes very slightly keeled. The occipital shield has an obtuse prominence, and instead of being produced behind, it is emarginate. Two series of spots in each interradial space of the dorsal fin. (*Val.*)

Brazil?

7. Plecostomus alatus.

Casteln. Anim. Amér. Sud, Poiss. p. 41. pl. 20. fig. 1.

D. 1/7. A. 5. P. 1/6. V. 1/5. L. lat. 27.

Head depressed, with scarcely any prominence on the occiput and on the nape; its length is a little more than one-fourth of the total (without caudal); the diameter of the eye is one-half of the width of the interorbital space. The middle of the extremity of the snout is naked; interoperculum without spines. The lower side of the head is naked, with the exception of a granulated elongate-ovate space on each side of the anterior labial fold; a similar granulated patch between the mouth and the gill-opening. The thorax is nearly entirely covered with granulations, whilst the sides of the belly remain naked. Dorsal fin very high, the anterior rays being much longer than the head; the length of its base is rather more than its distance from the second fin; there are eight scutes between the two fins. Caudal fin subtruncated, with the lower rays rather longer than the upper. The pectoral spine is broad, extending to the second third of the length of the ventral, and is covered above with numerous slender curved spines. Thirteen scutes between anal and caudal. Scutes of the body granulated, without keels; post-humeral ridge distinct, but obtuse. All parts with numerous small round yellow spots; each of the larger scutes has two or three of these spots, the smaller ones only one.

Minas Geraës.

a. Skin: 17 inches long. River Cipo. From Mr. Ch. Cumberland's Collection.—Vernac. name: Cascudo.

8. Plecostomus auroguttatus.

Hypostomus auroguttatus, *Kner, Hypostom.* p. 269. taf. 2. fig. 3.
—— asperatus, *Casteln. Anim. Amér. Sud, Poiss.* p. 41. pl. 20. fig. 2.

D. 1/7. A. 5.

Occiput and nape depressed; the length of the head is less than one-third of the total (without caudal); snout very broad and obtuse, semicircular, the head being as broad as long; eye of moderate size, its diameter being somewhat less than one-half of the width of the interorbital space. Scutes of the body with scarcely any keels, but with the margins spiny; margins of the opercles with short spines. Throat, thorax, and belly with only a few small granulated patches, otherwise naked. There are twelve or thirteen scutes between anal and caudal. Lower jaw with about sixty thin, long, non-lobate teeth on each side. Dorsal fin rather higher than long, the length of its first ray being equal to that of the head. The pectoral spine extends to the end of the ventral. Sides of the body with irregular longish yellowish spots, sometimes confluent into bands. Fins with similar spots. (*Kner.*)

Brazil.

9. Plecostomus wuchereri.

D. 1/7. A. 5. P. 1/6. V. 1/5. L. lat. 26.

Head and nape depressed, scarcely elevated along the middle, its length being contained thrice and two-thirds in the total (without caudal). No ridge between the eye and the nostril. The diameter of the eye is one-third of the width of the interorbital space. The middle of the extremity of the snout is naked. Labial folds well developed, with numerous papillæ; barbel short, as long as the eye. Upper jaw with about forty-five teeth on each side, the lower with about thirty-six. Interoperculum without any spines. A triangular space on each side of the lower surface of the head, between the labial fold and the gill-opening, is covered with minute shields, the interspace behind the middle of the lower lip being naked. Thorax and a large triangular blotch, extending in the middle of the belly to between the ventral fins, covered with minute rough shields, the lateral portions of the belly being naked. The length of the base of the dorsal is more than its distance from the second fin; there are six or seven scutes between the two fins. Dorsal fin not much higher than long, the length of its first ray being less than that of the head. Caudal fin obliquely subtruncated; its outer rays are not spiny, and the lower is only a little longer than the upper; there are thirteen or fourteen scutes between the anal and caudal. Pectoral spine very strong, armed above with numerous long curved spines; it extends backwards to, or nearly to, the middle of the ventral fin The scutes of the body are striated, but not keeled, and the posthumeral ridge is rather obtuse. Body and all the fins with numerous round brown spots, which are not much smaller than the eye, forming two series between the dorsal rays, and one between the caudal rays.

Brazil.

a. Fine specimen. Bahia. From Dr. O. Wucherer's Collection.
b–c. Adult: stuffed: 13 inches long. Purchased of Mr. Argent.
d. Half-grown. From the Collection of the Zoological Society.

10. Plecostomus brevicauda.

D. 1/7. A. 5. P. 1/6. V. 1/5. L. lat. 26.

Head and nape depressed, scarcely elevated along the middle; its length is two-sevenths of the total (without caudal). No ridge between the eye and the nostril. The diameter of the eye is nearly one-third of the width of the interorbital space. The middle of the extremity of the snout is naked. Labial folds well developed, with numerous papillæ; barbel short, longer than the eye. There are about forty teeth on each side of the upper and lower jaws. Interoperculum without any spines. A triangular space on each side of the lower surface of the head, between the labial fold and the gill-opening, the thorax, and almost the entire abdomen before the ventrals are covered with minute rough shields. The length of the base of the dorsal fin equals its distance from the caudal; there are seven or eight scutes between the two dorsal fins. Dorsal a little higher than long, the length of its first ray being a little more than that of the head. Caudal fin obliquely subtruncated; its outer rays are not spiny, and the lower is longer than the upper; there are twelve scutes between the anal and caudal. Pectoral spine very strong, armed above with numerous long curved spines; it extends backwards to the second third of the length of the ventral. The scutes of the body are striated, but not keeled, and the posthumeral ridge is rather obtuse. All the fins with numerous black dots, which are only one-half or one-third as large as the eye, forming three irregular series in each interradial space of the dorsal fin, and two in each of the caudal.

Brazil.

a–b. Fine specimens, 10 inches long. Bahia. From Dr. O. Wucherer's Collection.

11. **Plecostomus robinii.**

Cuv. & Val. xv. p. 501.

D. 1/7. A. 5. P. 1/6. L. lat. 26.

Head depressed, with scarcely any prominence on the occiput and nape, its length being one-third of the total (without caudal); no ridge between eye and nostril. Snout broad, subsemicircular, with its extremity somewhat thickened, and naked in the middle; labial fold of moderate width, not notched behind. Interoperculum without any spines. Thorax and belly entirely naked, there being only a few minute granulations between the labial fold and the gill-opening. Dorsal fin rather longer than high, the length of its base being more than its distance from the second fin. There are seven scutes between the two fins. Caudal obliquely emarginate. The pectoral spine extends to the base of the ventral, and has its extremity covered with very short bristles. Fourteen scutes between anal and caudal; the lateral scutes of the body without keels or prominent spines; posthumeral ridge very obtuse. Head, body, and fins with round black spots, those on the head being much more numerous and considerably smaller than the others; the spots on the body are arranged in about five longitudinal series; only one series on each interradial space of the dorsal fin; the spots of the caudal fin form six transverse series.

South America; (Rio de la Plata, Trinidad*).

a. Fine specimen. Bahia. From Dr. O. Wucherer's Collection.

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* Trinidad appears to be inhabited by a species with the scutes keeled; it has been described by Mr. Gill under the name of *Hypostomus robinii*, but is evidently different from our species (Ann. Lyc. Nat. Hist. New York, vi. p. 46).

12. Plecostomus granosus.

Cuv. & Val. xv. p. 502.

D. 8. A. 7*. P. 1/7*.

Interoperculum without spines. Head and body depressed, without keels or ridges. Lips with coarse soft granulations; a large space before the ventrals is occupied by osseous scutes, so that only the anterior half of the abdomen, and the præanal region are naked. The eyes are small, placed between the second and third thirds of the length of the head, which is one-fourth of the total (with the caudal). Brownish. (*Val.*)

Cayenne; Brazil.

** Margin of the snout with short bristles.

13. Plecostomus barbatus.

Cuv. & Val. xv. p. 506; *Kner, Hypostom.* p. 268. taf. 2. fig. 2.

D. 1/7. A. 5–6. P. 1/6. L. lat. 24–25.

Head much depressed, with the occiput and nape very little convex; its length is contained thrice and a third in the total (without caudal); the diameter of the eye is one-half of the width of the interorbital space. The margin of the snout from its extremity to the gill-opening is soft, and covered with very small prickles, which become a little longer backwards; the operculum also has a finely serrated margin†. The lower side of the head, thorax, and belly entirely naked. Dorsal fin not higher than long in old examples, but rather higher in immature specimens; the anterior rays always shorter than the head; the length of the base of the dorsal fin is nearly equal to its distance from the caudal; there are six or seven scutes between the two dorsal fins. Caudal fin obliquely truncated, the lower rays being considerably longer than the upper. The pectoral spine is broad, extending nearly to the middle of the ventral, and is covered above with short curved spines. Twelve scutes between anal and caudal: scutes of the body finely granulated and striated, without keels; posthumeral ridge very obtuse. Uniform dark brown.

Surinam.

a. Fine specimen, 9 inches long. Surinam. Purchased of Mr. Kappler.

b, *c*. Half-grown and young.

14. Plecostomus guttatus.

Cuv. & Val. xv. p. 508.

Very similar to *P. barbatus*, but with conspicuously smaller eyes.

D. 1/7. A. 6. P. 1/6. L. lat. 25.

Head much depressed, with the occiput and the nape flattish; its length is contained thrice and a third in the total (without caudal); the diameter of the eye is two-fifths of the width of the interorbital space. Margin of the snout soft and naked anteriorly; laterally with small spiny scutes, the bristles becoming a little longer on the interoperculum, margin of the operculum not serrated. The lower side of the head, thorax, and belly entirely naked. Dorsal fin longer than high, the length of its anterior rays being two-thirds of that of the head; the length of its base is more than its distance from the second fin; there are seven scutes between the two dorsal fins. Caudal obliquely truncated. The pectoral spine does not extend to the root of the ventral. Ten scutes between anal and caudal; scutes of the body finely granulated and striated, without keels; post-humeral ridge very obtuse. Uniform dark brown. (According to Valenciennes, a series of white spots in each interval between the dorsal rays.)

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* These numbers are so unusual in this genus, that we may well suspect them to be erroneous.

† This species evidently approaches the group with erectile interopercular spines.

Guiana.

a. Five and a half inches long. British Guiana. Presented by Sir R. Schomburgk.

β. Teeth few in number, much dilated at the crown.

15. Plecostomus cochliodon.

Cochliodon hypostomus, *Heckel, MS.*
Hypostomus cochliodon, *Kner, Hypostom.* p. 265. taf. 2. fig. 1.

D. 1/7. A. 5. P. 1/6.

The length of the head is not quite one-third of the total (without caudal); occiput and nuchal region elevated. The free margin of the opercles with small spines; scutes of the body keeled, the keels being serrated. Jaws with only seven or eight short teeth on each side, which terminate in a dilated spoon-like crown. Throat, thorax, and belly covered with small scutes. Dorsal fin as high as long; there are five or six scutes between the second dorsal and the caudal. The pectorals extend beyond the base of the ventrals, and their outer ray is armed with long curved spines; caudal with the lobes of nearly equal length. Yellowish brown, with a few scattered round brown spots. (*Kner.*)

Rio Cujaba.

94. LIPOSARCUS.

This genus agrees in all the characters with *Plecostomus*, having the interoperculum entirely destitute of spines, but there are thirteen or fourteen rays in the dorsal fin.

Surinam and Brazil.

1. Liposarcus multiradiatus.

Hypostomus multiradiatus, *Hancock, Zool. Journ.* iv. p. 246.

D. 1/13. A. 5. P. 1/6. V. 1/5. L. lat. 29.

Head not depressed, its length being two-sevenths of the total (without caudal); a rather prominent ridge runs from the eye to below the nostril; occiput with a rather elevated ridge, scutes of the nape bicarinate. Barbel longer than the eye, which is rather small, its diameter being nearly one-fourth of the width of the interorbital space. Interoperculum without any spines. Thorax and belly entirely granulated. Dorsal fin much longer than high, the length of its base being equal to its distance from the extremity of the snout; the length of its anterior rays equals that of the head; there are six scutes between the two dorsal fins. (Caudal fin injured.) Eleven scutes between anal and caudal. The pectoral spine does not extend on to the middle of the ventral. Scutes of the body with a serrated keel. Ferruginous grey.

Demerara.

a. Type of the species, 6½ inches long: stuffed. From the Collection of the Zoological Society.

2. **Liposarcus altipinnis.**

D. 1/13. A. 5. P. 1/6. V. 1/5. L. lat. 29

Head not depressed, its length being one-third of the total (without caudal); it is longer than broad, and has the snout somewhat pointed; the side of the head below the nostril is somewhat impressed. Occiput and nape very conspicuously elevated. Eye of moderate size, its diameter being one-half of the width of the interorbital space. Teeth minute; barbel as long as the eye. Interoperculum without any armature. Thorax and belly nearly entirely naked; some minute granulations are visible on the side of the belly and along the median line. Scutes of the body strongly striated, the middle stria being elevated into a keel. Dorsal fin high, its third ray being considerably longer than the head, and its last extending to the root of the caudal if laid backwards; the length of its base equals its height, and its distance from the extremity of the snout. There are six scutes between the two dorsal fins. Caudal fin obliquely subtruncated, the lower lobe being considerably longer than the upper, and nearly one-third of the total length; anal fin well developed; there are thirteen scutes between the anal and caudal. Pectoral spine extending beyond the base of the ventral. Entirely brownish black; dorsal fin with two series of scarcely conspicuous round black spots along its basal portion.

River Cupai.

b. Four and a half inches long. · Purchased of Mr. Stevens.

3. **Liposarcus pardalis.**

Hypostomus pardalis, *Casteln. Anim. Amér. Sud, Poiss.* p. 42. pl. 20. fig. 3.

D. $\frac{1}{12}$. A. 1/5.

Head and body rather depressed and elongate; scutes of the body strongly keeled. Dorsal fin much longer than high. Yellowish, with numerous brown dots.

River Amazons.

95. CHÆTOSTOMUS*.

Chætostomus, *Heckel*†, *in Tschudi, Faun. Per. Pisces,* p. 25.
Hypostomus, sp., *Cuv. & Val.* xv. p. 503.
Chætostomus et Ancistri brachypteri, *Kner, Denkschr. Acad. Wiss.* 1854, vii. p. 256.
Ancistrus, Hemiancistrus, Chætostomus, Parancistrus, et Pseudacanthicus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 78.

This genus differs from *Hypostomus* in having the interoperculum very moveable and armed with erectile spines; the number of dorsal rays varies between eight and ten.

Continent of tropical America; Porto Rico.

Some ichthyologists are of opinion that the species of this genus are subject to changes in the development of the pectoral spines, of the dorsal rays, and of the armature of the interoperculum, and, further, that the sexes differ in external characters. If this be so, it is certainly not the case in all the species, as I have found young and old individuals of one and the same species remarkably alike, if obtained at the same locality. However, the eye and the head always appear to be larger in young individuals than in old ones, as has been already urged by Kner on different occasions. The species themselves are imperfectly known, as they are not largely represented in collections made in South America. Most of them appear to be local, and therefore we may expect numerous additions to the already considerable number of species known. There are many intermediate forms between the species with elevated and mailed head, and those with depressed head and soft-skinned snout, so that but little value can be attached to the subgeneric divisions which have lately been proposed.

The species may be divided as follows:—

I. Margin of the snout with hard granulations.
  α. Dorsal fin nine-rayed: *Pseudacanthicus,* Blkr., p. 241.
  β. Dorsal fin eight-rayed.
    * Scutes of the body with distinct keels; dorsal fins distant: *Hemiancistrus,* Blkr., p. 242.
    ** Scutes of the body without distinct keels; dorsal fins distant: *Ancistrus,* sp., Blkr., p. 244.
    *** Dorsal fins subcontinuous: *Parancistrus,* Blkr., p. 246.

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* 1. Hypostomus bufonius, *Cuv. & Val.* xv. p. 511.—Rio Apurimac (Peru).
2. —— temminckii, *Cuv. & Val.* xv. p. 514.—Cayenne.
3. Hypostoma squalinum, *Schomb. Fish. Brit. Guian.* i. p. 142. pl. 2.—British Guiana.

† Although Tschudi claims the authorship of this genus and of the typical species (*Ch. loborhynchus*), it is evident, from the scientific character of the description, that it is from another pen. Kner, indeed, informs us that it is Heckel who named, described, and figured that genus and the species in the 'Fauna Peruana.' This fact reminds us of a similar claim laid by Bibron to some of the genera of Batrachians published by the same author.

II. Snout more or less naked.
a. Dorsal fin eight-rayed: *Ancistrus*, sp., Blkr.
* Snout with tentacles, p. 247.
** Snout without tentacles, p. 249.
β. Dorsal fin nine- or ten-rayed.
* Snout with tentacles, p. 249.
** Snout without tentacles; upper labial fold not dilated in the middle, p. 250.
*** Snout without tentacles; upper labial fold much dilated in the middle: *Chætostomus*, Heck., p. 250.

I. Margin of the snout with hard granulations.

a. Dorsal fin nine-rayed.

1. Chætostomus serratus.

Hypostomus serratus, *Cuv. & Val.* xv. p. 503.
Pseudacanthicus serratus, *Bleek. l. c.* p. 79.

D. 1/8. A. 6. P. 1/6. V. 1/5.

Head large, depressed, longer than broad, its length being one-third of the total (without caudal); snout broad and elongate; interorbital space flat; eye rather small. The margin of the snout is covered with small spinous plates, the spines on the side of the snout being the largest; interoperculum with a bundle of about fifteen slender spines, which are much longer than the orbit, but do not extend beyond the gill-opening. Thorax and belly naked. Dorsal fin sometimes a little higher than long, sometimes lower, the length of its base being rather less than its distance from the caudal; there are eight scutes between the two dorsal fins. Lower caudal lobe not much longer than upper. Pectoral spine strong, covered with long hook-like spines, and extending somewhat beyond the base of the ventral. Ten scutes between anal and caudal. Scutes of the body covered with spines, those along the median line of each scute being long, similar to those of the pectoral spine. Posthumeral ridge indistinct. Deep black or brownish black, with a few inconspicuous small round whitish spots on the lower part of the tail.

Surinam.

a–b. From twelve to fifteen inches long. From the Stuttgart Museum.

2. Chætostomus spinosus.

Hypostomus spinosus, *Casteln. Anim. Amér. Sud, Poiss.* p. 45. pl. 22. fig. 3.

D. 1/8. A. 6.

Snout depressed and rather long; body somewhat elongate; eye small. Head, scutes of the body, and the outer fin-rays covered with spines. The pectoral spine is not longer than the head. All parts covered with small round black spots. (*Cast.*)

River Amazons.

Kner considers this fish identical with *Acanthicus hystrix*, Spix (Wiegm. Arch. 1858, p. 348).

β. Dorsal fin eight-rayed.

* Scutes of the body with distinct keels.

3. Chætostomus medians.

? Ancistrus medians, *Kner, Hypostom.* p. 256.

D. 1/7. A. 5. P. 1/6. L. lat. 24.

Head large, not depressed, broader than long, its length being contained thrice and a third in the total (without caudal); snout very broad, rounded in front. Orbit elevated, interorbital space rather concave; eye large, its distance from the posterior end of the head being equal to its diameter, which is more than one-half of the width of the interorbital space. The margin of the snout is roughly granulated; interoperculum with a bundle of about thirty-five setiform spines, the longest of which are one-third of the length of the head, and extend backwards to behind the root of the pectoral. Thorax and belly nearly entirely naked, being covered with patches of small granulations only laterally and anteriorly. Dorsal fin nearly as high as long, the length of its anterior rays being rather less than that of the head; the length of its base is nearly equal to its distance from the caudal; there are six scutes between the two dorsal fins. Caudal fin obliquely truncated, the lower lobe being much longer than the upper. The pectoral spine is strong, extending to the middle of the ventral fin, and covered behind with setiform spines; the ventral fins extend somewhat behind the anal. Thirteen scutes between anal and caudal; scutes of the body with a prominent serrated keel and with radiating rough striæ; posthumeral ridge rather distinct. Brown, all parts covered with round black spots of moderate size; those on the head are smaller, and those on the belly less numerous, than those on the back. The spots on the dorsal fin form two series on each interradial space, partly covering the rays.

Surinam.

a–b. Fine specimens. Purchased of Mr. Kappler.

I have no doubt that our specimens are identical with *Ancistrus medians* of Kner, although he describes the belly as densely covered with small shields; M. Kner saw his specimens in the Stuttgart Collection, which received them from the same source as the British Museum.

4. Chætostomus pictus.

Ancistrus pictus, *Kner, Hypostom.* p. 277. taf. 4. fig. 2.

D. 1/7. A. 6. L. lat. 23–24.

Head broad, much depressed, without prominence on the occiput; its length is one-third of the total (without caudal). Eye of moderate size, two-thirds of the width of the interorbital space; an obtuse ridge runs from the orbit to below the nostril. Margin of the snout granulated, except in the middle of its extremity. Interoperculum with a bundle of about twenty setiform spines, the longest of which are one-third as long as the head. Scutes of the sides of the body keeled. Dorsal fin rather longer than high; the pectoral spine extends to the middle of the ventral. Caudal fin obliquely truncated. Brownish: the upper surface of the head and the body with rather irregular yellowish spots, which are partly confluent into cross-bands. Dorsal fin with three dark longitudinal bands. Lower parts whitish, immaculate. (*Kner.*)

Barra do Rio Negro.

5. Chætostomus brachyurus.

Ancistrus brachyurus, *Kner, Hypostom.* p. 279. taf. 4. fig. 1.

D. 1/7. A. 6. L. lat. 23.

Head depressed, without prominence on the occiput, as broad as long, its length being one-third of the total (without caudal); eye rather large, its diameter being two-thirds of the width of the interorbital space; margin of the snout granulated, except in the middle of its extremity, where it is naked. Interoperculum with about twenty setiform spines, the longest of which are one-third as long as the head. Scutes of the body with a serrated keel; thorax and belly naked; twelve scutes between anal and caudal. Dorsal fin considerably longer than high, the length of its base being somewhat less than its distance from the caudal. Pectoral spine longer than the head, extending to the middle of the ventral. Caudal fin obliquely truncated. Brown; dorsal fin with three dark bands. (*Kner.*)

Barra do Rio Negro.

6. Chætostomus itacua.

Hypostomus itacua, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 7. fig. 1; *Cuv. & Val.* xv. p. 505 *.

D. 1/7. A. 5.

Occiput with a slight prominence. Eye of moderate size, its diameter being two-thirds of the width of the interorbital space. Body with light longitudinal bands; fins with bluish cross-bands. (*Val.*)

Rio de la Plata.

7. Chætostomus niveatus.

Hypostomus niveatus, *Casteln. Anim. Amér. Sud, Poiss.* p. 43. pl. 21. fig. 3.

? Hypostomus pictus, *Casteln. l. c.* p. 44. pl. 22. fig. 2 †.

D. 1/7. A. 5.

Dorsal fin considerably longer than high; caudal obliquely truncated. Interopercular spines long, setiform. Brownish: body and fins with numerous small round white spots.

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* This species is very imperfectly known, the figure given in d'Orbigny's work being indifferently executed. Kner (Hypostom. p. 281) mentions a species in the Berlin Museum, probably the same as that collected by Schomburgk in British Guiana and determined by Müller and Troschel. From the notes made by Kner from these specimens, it appears that they belong to a species different from the *itacua* of the Rio de la Plata.

† It will be better to bury this so-called new species of M. Castelnau among the synonyms, than to carry it on as a doubtful form, as it is not probable that it will be recognized and characterized at a future time

Rio Araguay.

8. **Chætostomus scaphirhynchus.**

Ancistrus scaphirhynchus, *Kner, Hypostom.* p. 280. taf. 3. fig. 2.

D. 1/7. A. 6. L. lat. 25–26.

Head much depressed, without prominence on the occiput, longer than broad, its length being one-third of the total (without caudal). Snout very broad, very obtusely rounded in front, with the margin granulated. Eye of moderate size, its diameter being one-third, or less than one-third, of the width of the interorbital space; superciliary margin elevated. Interoperculum with from fifteen to eighteen setiform spines. Lateral scutes of the body with a serrated keel; thorax and belly naked; thirteen scutes between anal and caudal. Dorsal fin longer than high. Pectoral spine nearly as long as the head, extending somewhat beyond the root of the ventral. Caudal obliquely truncated, the lower lobe being one-third longer than the upper. Brown. (*Kner.*)

Barra dò Rio Negro.

** Scutes of the body without distinct keels; dorsal fins distant.

9. **Chætostomus mystacinus.**

Ancistrus mystacinus, *Kner, Hypostom.* p. 276.

D. 1/7. A. 6. L. lat. 22–23.

Head much depressed, without prominence on the occiput; its length is one-third of the total (without caudal): eye of moderate size, its diameter being nearly one-third of the width of the interorbital space. Margin of the snout granulated, with very short, but rather thick bristles; interopercular region with long fine bristles partly covering the interopercular spines, which are about twenty in number, long, setiform, and curved at their extremity. Scutes spiny, the spines being arranged in lines, not keeled; posthumeral ridge obtuse. Dorsal fin nearly as high as long; the pectoral spine extends to the base of the ventral, and is rather shorter than the head. Caudal forked, its lower lobe being the longer. Greyish olive: four or five large round black spots along each dorsal ray; the upper lobe of the caudal with similar spots, the lower entirely black. (*Kner.*)

Caraccas.

10. **Chætostomus oligospilus.**

D. 1/7. A. 5. P. 1/6. L. lat. 26.

Head not depressed, as broad as long, its length being contained thrice and a fourth in the total (without caudal); a very distinct short ridge runs from the upper angle of the orbit to below the nostril; occiput with a slight longitudinal prominence. Orbital margin rather elevated; eye of moderate size, its horizontal diameter being one-half of the width of the interorbital space. Margin of the snout granulated, without bristles; interoperculum with a bundle of about sixteen setiform spines, the longest of which are nearly one-third of the length of the head, and extend backwards to the root of the pectoral. Thorax and belly nearly entirely naked, being covered with patches of small granulations only laterally and anteriorly. Dorsal fin higher than long, the length of its anterior rays being more than that of the head; the length of its base is less than its distance from the caudal; there are seven scutes between the two dorsal fins. Caudal fin forked, the lower lobe being stronger, but not longer than the upper. The pectoral spine extends nearly to the middle of the ventral fin, the ventral fin to behind the anal. Thirteen scutes between anal and caudal. Scutes of the body without a keel; posthumeral ridge rather indistinct. Brown, all parts covered with round black spots of moderate size; those on the head are smaller than those on the body, those on the fins being the largest; there is only one series of these spots on each interradial space of the dorsal fin; the spots on the caudal are as large as the eye.

River Capin.

a. Five inches long. Purchased of Mr. Stevens

11. **Chætostomus schomburgkii.**

D. 1/7. A. 5. P. 1/6. L. lat. 25.

Head much depressed, a little longer than broad, its length being one-third of the total (without caudal); occipital and nuchal regions flat. Snout broad, much depressed, granulated above and on the margin, except in the middle of its extremity, where it is naked; its margin is without bristles; interoperculum with a bundle of about thirty long setiform spines, the longest of which is one-third of the length of the head. Eye rather small, its diameter being one-third of the width of the interorbital space. Thorax and belly entirely naked. Dorsal fin scarcely longer than high, the length of its base being a little more than its distance from the second fin; there are seven scutes between the two fins. Caudal obliquely truncated. The pectoral spine extends just to the base of the ventral. Eleven scutes between anal and caudal. The lateral scutes of the body without any keels, but with the margin slightly serrated. Posthumeral ridge very obtuse. Brownish, clouded with darker; fin-rays with brown dots.

British Guiana.

a–b. Three and a half inches long. Presented by Sir R. Schomburgk.

12. **Chætostomus guacharote.**

Hypostomus guacharote, *Cuv. & Val.* xv. p. 508.

D. 1/7. A. 6. P. 1/6.

Interoperculum with about twenty setiform spines, the longest of which are one-third of the length of the head. Head depressed, without protuberance in the occipital region; it is as broad as long, and its length is two-ninths of the total (with the caudal). Scutes striated, not keeled. The diameter of the eye is two-fifths of the width of the interorbital space. The pectoral spine extends beyond the root of the ventral fin; caudal forked, with the lobes much pointed. Thorax and belly naked. Brownish. (*Val.*)

Porto Rico.

13. **Chætostomus trinitatis.**

Ancistrus guacharote, *Gill, Ann. Lyc. Nat. Hist. New York,* vi. p. 409.

D. 1/7. A. 4. P. 1/6.

Head depressed, without protuberance in the occipital region; it is as broad as long, its length being one-third of the total (without caudal). The diameter of the eye is two-fifths of the width of the interorbital space. Interoperculum with a tuft of long and slender spines. Scutes of the body not keeled. The distance between the two dorsal fins is only one-half of the length of the base of the first Caudal forked, with the lobes pointed. Thorax and belly naked. Uniform reddish brown.

Trinidad.

Mr. Gill says that the species found by him agrees in every particular with *H. guacharote* of Valenciennes; but it is evident from the number of the anal rays, which are six in the latter species, that these fishes are different.

*** Dorsal fins subcontinuous.

14. **Chætostomus aurantiacus.**

Hypostomus aurantiacus, *Casteln. Anim. Amér. Sud, Poiss.* p. 43. pl. 21. fig. 2.

D. 1/7. A. 5. V. 1/4?

Head large, depressed, one-third of the total length (without caudal); eye small; interoperculum with numerous setiform spines. Dorsal fin longer than high; the membrane behind its last ray extends on to the isolated second dorsal spine. Pectoral spine covered with bristles. Scutes of the body not keeled. Orange-coloured. (*Cast.*)

Ucayale.

15. **Chætostomus nigricans.**

Hypostomus nigricans, *Casteln. Anim. Amér. Sud, Poiss.* p. 44. pl. 22. fig. 1.

D. 1/7. A. 5.

Head broad, depressed, with the snout obtuse; body and tail short. Interopercular spines long, setiform. Dorsal fin considerably longer than high, the membrane behind its last ray extending backwards to the second dorsal spine. Caudal fin obliquely truncated. (*Cast.*)

River Amazons.

II. Snout more or less naked.

a. Dorsal fin eight-rayed.

* Snout with tentacles.

16. Chætostomus cirrhosus.

Hypostomus cirrhosus, *Valenc. in d'Orbign. Voy. Amér. Mérid. Poiss.* pl. 7. fig. 3; *Cuv. & Val.* xv. p. 511.
Ancistrus cirrhosus, *Kner, Hypostom.* p. 272.

D. 1/7. A. 5. P. 1/6. L. lat. 23–25.

Head much depressed, occipital and nuchal regions without any prominence; the length of the head is contained twice and two-thirds or twice and three-fourths in the total (without caudal). Snout broad, much depressed, nearly entirely covered with soft skin, and provided with many tentacles in adult males; females and young specimens with only a few tentacles in front of the snout; eye of moderate size, its diameter being one-third or one-fourth of the width of the interorbital space. Interoperculum with from nine to twelve non-flexible curved spines, the strongest being longer than the eye. Thorax and belly entirely naked. Dorsal fin rather higher than long, the length of its base being a little more than its distance from the second fin; there are six or seven scutes between the two fins. Caudal fin obliquely truncated. Eleven scutes between anal and caudal; the lateral scutes of the body without keels, with a spiny margin; post-humeral ridge very obtuse. Uniform blackish brown; or covered all over with yellowish dots, the ground-colour between them forming a network.

South America.

a. Adult. Essequibo. From Mr. Ehrhardt's Collection.
b. Adult. British Guiana. Presented by Sir R. Schomburgk.
c–d. Adult and half-grown. From the Collection of the Zoological Society.

17. Chætostomus hoplogenys.

D. 1/7. A. 5. P. 1/6. L. lat. 25.

Very similar to *Ch. cirrhosus*, but with shorter interopercular spines.

Head much depressed, occipital and nuchal regions without any prominence; the length of the head is one-third of the total (without caudal). Snout broad, much depressed, granulated above, with a broad soft-skinned margin; a series of short tentacles round the margin. Eye of moderate size, its diameter being one-third or two-fifths of the width of the interorbital space. Interoperculum with eight or nine non-flexible curved spines, the strongest being rather shorter than the eye. Thorax and belly entirely naked. Dorsal fin rather higher than long, the length of its anterior rays being less than that of the head; the length of its base is more than its distance from the second fin; there are seven scutes between the two fins. Caudal fin obliquely truncated; the pectoral spine extends backwards to the second third of the ventral fin. Ten scutes between anal and caudal; the lateral scutes of the body with rough striæ, but without keel;

posthumeral ridge very obtuse. Uniform blackish brown; belly with minute whitish dots.

Para.

a–c. From 4 to 5 inches long. River Capin. Purchased of Mr Stevens.

18. Chætostomus leucostictus.

D. 1/7. A. 4. P. 1/6. L. lat. 25.

Head much depressed, rather longer than broad; occipital and nuchal regions without any prominence; the length of the head is more than one-third of the total (without caudal). Snout broad, much depressed, granulated above, with a narrow soft-skinned margin and with a few short tentacles. Eye of moderate size, its diameter being two-fifths of the width of the interorbital space. Interoperculum with about seven non-flexible, short, curved spines, the strongest being much shorter than the eye. Thorax and belly entirely naked. Dorsal fin as high as long, the length of its anterior rays being much less than that of the head; the length of its base is more than its distance from the second fin; there are seven scutes between the two fins. Caudal fin obliquely truncated; the pectoral spine extends to the base of the ventral. Eleven scutes between anal and caudal; the lateral scutes of the body with rough striæ, but without keel; posthumeral ridge very obtuse. Black; pure white dots are scattered over the whole body and over all the fins.

Essequibo.

a. Three inches long From Mr. Ehrhardt's Collection.

19. Chætostomus calamita.

Hypostomus calamita, *Cuv. & Val.* xv. p. 515.

D. 1/7. A. 5. P. 1/6. L. lat. 26.

Head much depressed, as broad as long, its length being one-third of the total (without caudal); occipital and nuchal regions without any prominence. Snout broad, much depressed, granulated on its posterior half, with many tentacles on its anterior, soft-skinned half. Eye rather small, its diameter being two-sevenths of the width of the interorbital space; the space between the eye and the operculum is only partially granulated. Interoperculum with about fourteen non-flexible curved spines, the longest of which is twice as long as the eye. Thorax and belly entirely naked. Dorsal fin higher than long, the length of its base being equal to its distance from the second fin; there are eight scutes between the two fins. Caudal fin obliquely truncated. Twelve scutes between anal and caudal; the lateral scutes of the body without keels, finely granulated; posthumeral ridge very obtuse. Uniform brown.

Peru.

a. Adult. Rio Apurimac. From Mr. Pentland's Collection.—One of the typical specimens.

** Snout without tentacles.

20. Chætostomus gymnorhynchus.

Ancistrus gymnorhynchus, *Kner, Hypostom.* p. 275.

D. 1/7. A. 5.

Head much depressed, occipital and nuchal regions without any prominence; the length of the head is one-third of the total (without caudal). Snout broad, much depressed, granulated above, with a broad soft-skinned margin in its entire circumference; tentacles none. The diameter of the eye is two-fifths of the width of the interorbital space. Interoperculum with thirteen or fourteen curved non-flexible spines. Thorax and belly entirely naked. Dorsal fin higher than long; caudal vertically truncated. Scutes of the body with minute spines, not keeled. Brownish. (*Kner.*)

Puerto Cabello.

21. Chætostomus nudiceps.

Hypostomus nudiceps, *Müll. & Trosch. in Schomb. Reis. Brit. Guian.* iii. p. 631.

D. 1/7. A. 5.

Head much depressed, occipital and nuchal regions without any prominence; snout covered with soft skin nearly to the eyes; tentacles none. The pectoral spine extends beyond the base of the ventrals. (*M. & T.*)

British Guiana.

22. Chætostomus erinaceus.

Hypostomus erinaceus, *Cuv. & Val.* xv. p. 510.

D. 8. A. 3. P. 1/5.

Body short, broad, and depressed; extremity of the snout naked; interoperculum with a bundle of about twenty setiform spines. Scutes of the body rough, not keeled. (*Val.*)

Chile.

β. Dorsal fin nine- or ten-rayed.

* Snout with tentacles.

23. Chætostomus dolichopterus.

Ancistrus dolichopterus, *Kner, Hypostom.* p. 274. taf. 3. fig. 1.

D. $\frac{1}{9\,(8)}$. A. 5.

Head much depressed, occipital and nuchal regions without any prominence; the length of the head is somewhat more than one-third of the total (without caudal). Snout broad, much depressed, covered with soft skin and provided with many tentacles in males, whilst a great portion of its upper surface is granulated in females, only the margin bearing some tentacles. Eye of moderate size, its diameter being two-fifths or one-third of the width of the interorbital space. Interoperculum with from six to nine curved non-flexible spines.

Thorax and belly entirely naked. Dorsal fin as high as long, the length of its base being equal to its distance from the caudal. Caudal fin obliquely truncated. Scutes of the body with a spiny margin, without keel. Brownish, the lower side with brown dots. (*Kner.*)

Barra do Rio Negro.

** Snout without tentacles; upper labial fold not dilated in the middle.

24. Chætostomus microps.

Hypostomus erinaceus, *Günth. Proc. Zool. Soc.* 1859, p. 420 (not synon.).

D. 1/9. A. 4. P. 1/6. V. 1/5. L. lat. 24.

Head and nape much depressed, without any prominence; the width of the head equals its length, and is one-third of the total (without caudal); the entire margin of the snout is naked, soft, and swollen, without tentacles, the fold of the upper lip being short, and not prolonged in the middle; barbel very short. Eye very small, its diameter being about one-ninth of the length of the head, and less than one-third of the width of the interorbital space. Interoperculum with a bundle of about ten erectile spines, which are neither flexible, nor curved at the end; the longest are longer than the eye. Thorax and abdomen entirely naked. The dorsal fin is considerably longer than high, the length of its anterior rays being only two-thirds of that of the head; the length of its base equals its distance from the caudal fin; there are six scutes between the two dorsal fins. Caudal fin obliquely truncated; anal very small; ten scutes between anal and caudal. Pectoral spine of moderate strength, extending to the root of the ventral fin. Scutes of the body not keeled, provided with comparatively long spines along the margin; posthumeral ridge very indistinct. Uniform blackish brown: rays of the dorsal and caudal fins annulated with black.

Andes of Western Ecuador.

a–g. From 2½ to 3½ inches long. From Mr. Fraser's Collection.

*** Upper labial fold much dilated in the middle.

25. Chætostomus loborhynchus.

Heckel, in Tschudi, Faun. Per., Fische, p. 26. taf. 4.

D. 1/8. A. 4. L. lat. 25–26.

Head much depressed, without eminence on the occiput, nearly as long as broad. Snout granulated above, with a broad, swollen, soft-skinned margin in its whole circumference. The fold of the upper lip very broad, broadest in the middle. Tentacles none. Teeth very fine, not notched at their extremity. Eye small, its diameter being two-fifths of the width of the interorbital space. Opercular margin and interoperculum with rather short spines, eleven on the latter. The pectoral spine is as long as the head, and extends somewhat beyond the root of the ventral. Scutes without keels. Brown.

Rio Tullumayo (Eastern Andes).

96. PTERYGOPLICHTHYS.

Ancistri macropteri, *Kner, Denkschr. Acad. Wiss. Wien,* 1854, vii. p. 256.
Pterygoplichthys, sp., *Gill, Ann. Lyc. Nat. Hist. New York,* vi. p. 408.

This genus agrees in all the characters with *Hypostomus*, but has the interoperculum armed with erectile spines, and from twelve to fourteen rays in the dorsal fin.

Brazils.

1. Pterygoplichthys duodecimalis.

Hypostoma etentaculatum, *Spix, Pisc. Bras.* p. 7. tab. 4 (bad).
Hypostomus duodecimalis, *Cuv. & Val.* xv. p. 498. pl. 454 (not good).
—— brevitentaculatus, *Ranzani, Nov. Comm. Acad. Sc. Inst. Bonon.* 1842, v. p. 328.
Ancistrus longimanus, *Kner, Hypostom.* p. 283.

D. 1/11. A. 5. P. 1/6. V. 1/5. L. lat. 28–29.

Head not depressed, its length being a little less than one-third of the total (without caudal); a rather prominent ridge runs from the eye to below the nostril; occiput with a rather elevated ridge, scutes of the nape bicarinate. A short barbel on each side of the mouth. Eye small, its diameter being somewhat more than one-fourth of the width of the interorbital space. Interoperculum with a bundle of about seven erectile spines, which are slightly flexible, and curved at the end; the strongest is a little longer than the eye. Thorax and belly nearly entirely covered with minute imbricate scutes. Dorsal fin much longer than high, the length of its anterior rays being equal to its distance from the caudal; there are seven scutes between the two dorsal fins. Caudal obliquely truncated; anal well developed; thirteen scutes between anal and caudal. The pectoral spine is extremely long and strong, spiny, extending nearly as far backwards as the ventral. Scutes of the body keeled. All parts with numerous, round, closely-set, small brown spots, which are confluent in some places, forming reticulated lines; they are smallest on the head, largest and surrounded with white on the fins; they form two more or less confluent series on each interradial space of the dorsal fin. Membrane of the second dorsal fin black.

Rio San Francisco.

a. Fifteen inches long: stuffed. Brazil.

2. Pterygoplichthys punctatus.

Loricaria punctata, *Natterer, MS.*
Ancistrus duodecimalis, *Kner, Hypostom.* p. 281 (not synon.).

D. 1/12. A. 5.

The length of the head is two-sevenths of the total (without caudal); occiput with a slight longitudinal prominence. The diameter of the eye is two-sevenths of the width of the interorbital space. Interoperculum with a few erectile spines. Scutes of the body keeled; lower parts covered with small shields. Barbels longish. There are six scutes between the two dorsal fins, and thirteen between anal and caudal. The pectoral spine extends a little beyond the base of the ventral. Yellowish, all parts with round blackish spots. (*Kner.*)

This species is known from a single example, 11½ inches long; it is from S. Vicente (Brazil).

3. Pterygoplichthys gibbiceps.

Ancistrus gibbiceps, *Kner, Hypostom.* p. 284. taf. 5. fig. 2.

D. 1/13. A. 5.

The length of the head is two-sevenths of the total (without caudal); eye of moderate size, its diameter being two-sevenths of the width of the interorbital space. Occiput with a large pear-shaped prominence*. Interoperculum with about twenty very short curved hooks. Scutes of the body keeled; all the lower parts covered with small shields. Barbels long, extending to the gill-opening. Dorsal fin much longer than high. Five scutes between the two dorsal fins. Pectoral spine as long as the head, scarcely extending beyond the root of the ventral fin. Caudal obliquely truncated. All parts with roundish black spots. (*Kner.*)

Only a single specimen is known, 20½ inches long; from the Rio Negro.

4. Pterygoplichthys lituratus.

Ancistrus lituratus, *Kner, Hypostom.* p. 285. taf. 5. fig. 3.

D. 1/12. A. 5.

The length of the head is one-third of the total (without caudal); eye of moderate size, its diameter being one-fourth of the width of the interorbital space in old individuals, whilst it is larger in young ones. Occiput with a rather elevated ridge, which is not broader behind than in the middle. Interoperculum with about twenty short curved hooks. Scutes of the body keeled; all the lower parts covered with small shields. Barbels longish. Blackish, with irregular, rounded, brownish-yellow spots; fins with undulated streaks. (*Kner.*)

Rio Guaporé.

97. RHINELEPIS†.

Rhinelepis, *Spix, Pisc. Brasil.* p. 4.

One dorsal fin with eight rays; anal fin short; ventral six-rayed, below the dorsal; pectoral with a strong spine. Head and body completely cuirassed, the former rather high, the latter rather short, with four or five longitudinal series of large imbricate scutes on each side; tail not depressed. Snout produced, obtuse in front; mouth inferior, transverse, with a single series of very fine bent teeth in both jaws; palate toothless. Præoperculum immoveable; interoperculum not armed. Gill-opening very narrow.

Brazil.

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* Probably peculiar to old specimens.

† 1. Rinelepis strigosa, *C. & V.* xv. p. 480.—Parana.

1. Rhinelepis aspera.

Spix, Pisc. Brasil. p. 4. tab. 2; *Cuv. & Val.* xv. p. 483.

D. 1/7. A. 6. P. 1/6.

The origin of the dorsal fin is opposite to that of the ventral. Uniform brown.

Rio San Francisco.

98. ACANTHICUS*

Acanthicus, *Spix, Pisc. Brasil.* p. 2.

Differs from *Rhinelepis* in having the interoperculum armed with a bundle of long erectile spines.

Brazil.

1. Acanthicus genibarbis.

Rinelepis genibarbis, *Cuv. & Val.* xv. p. 484. pl. 453.
? Hypostomus vicinus, *Casteln. Anim. Amér. Sud, Poiss.* p. 45. pl. 23. fig. 1.

D. 1/7. A. 6. P. 1/6.

Snout and fin-rays not spiny; the length of the pectoral spine is two-ninths of the total; caudal fin subtruncated. Scutes indistinctly keeled, without serrature. (*Val.*)

Brazil?

2. Acanthicus hystrix.

Acanthicus hystrix, *Spix, Pisc. Brasil.* p. 3. tab. 1.
Rinelepis acanthicus, *Cuv. & Val.* xv. p. 487.

D. 1/8. A. 6. P. 1/6.

Head entirely covered with short spines; the outer fin-rays spiny; pectoral spine exceedingly long, extending nearly as far backwards as the ventral; the outer caudal rays prolonged. Each scute with a strongly serrated keel.

River Amazons.

This species is founded, at present, on the single typical specimen in the Museum at Munich; it is stuffed, and said to be in a bad state of preservation. Kner (Hypostom. p. 254), after an examination of this specimen, asserts that the absence of the second dorsal fin is merely accidental, and, therefore, that it would belong to *Chætostomus* (according to our definition of that genus). In his critical remarks on Castelnau's Siluroids (Wiegm. Arch. 1858, p. 348) he is even inclined to consider it as identical with the *Hypostomus spinosus* of the latter author, but this has a much shorter pectoral spine.

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* 1. Rinelepis hystrix, *Cuv. & Val.* xv. p. 486.—*Hab.* —— ?

99. LORICARIA*

Loricaria, sp., *L. Syst. Nat.* i. p. 508.
Loricaria, *Lacép.* v. p. 140; *Cuv. & Val.* xv. p. 453.
Loricaria et Hemiodon, *Kner, Denkschr. Acad. Wiss. Wien*, 1853, vi. *Loricar.* p. 11.
Loricariichthys, Loricaria, Pseudoloricaria, Parahemiodon, Hemiloricaria, Pseudohemiodon, Rineloricaria, Oxyloricaria, Sturisoma, Hemiodon, et Hemiodontichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 80.

One short dorsal fin, opposite to the ventrals; anal fin short; the outer ray of each fin thickened, but flexible. Head depressed, with the snout more or less produced and spatulate; mouth situated at the lower side of the snout, remote from its extremity, transverse, surrounded by broad labial folds which are sometimes fringed; a short barbel at each corner of the mouth. Teeth in the jaws small, bent, with a dilated, notched apex, in a single series, sometimes rudimentary or absent; no teeth on the palate. Head and body cuirassed; tail depressed, long; eye rather small or of moderate size. Præoperculum immoveable; gill-opening very narrow. Formula of the fins:—D. 1/7. A. 6. V. 1/5.

Fresh waters of South America.

The species may be subdivided thus:—

a. Teeth in both jaws very distinct: LORICARIA, Kner.

* Snout broad, of moderate length, without erectile bristles (*Loricaria, Pseudoloricaria, Hemiloricaria*, Blkr.), p. 255.

** Snout long and narrow, without bristles (*Sturisoma*, Swainson), p. 256.

*** Snout long and narrow; sides of the head with erectile bristles (*Oxyloricaria*, Blkr.), p. 257.

β. Teeth rudimentary, visible only in the lower jaw, or entirely absent: HEMIODON, Kner.

* Snout broad, of moderate length (*Loricariichthys, Parahemiodon, Pseudohemiodon*, Blkr.), p. 257.

** Snout rather produced and pointed in front, p. 258.

*** Snout long and narrow (*Hemiodon, Hemiodontichthys*, Blkr.), p. 259.

(*γ. Species the dentition of which is not, or imperfectly known*, p. 260.)

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* 1. Loricaria platyura, *Müll. & Trosch. in Schomb. Guiana*, iii. p. 631.—Rupununi.
2. Hemiloricaria caracasensis, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 81.—Caraccas.
3. Loricaria uracantha, *Kner, Sitzgsber. Acad. Wiss. Münch.* 1863, p. 228.—Rio Chagres.
4. —— scolopacina, *Filippi.*

a. Teeth in both jaws very distinct.

* Snout broad, of moderate length; head without erectile bristles.

1. Loricaria cataphracta.

Loricaria dura, *L. Mus. Ad. Fred.* p. 79. pl. 29. figs. 1 & 2.
—— cataphracta, *L. Syst. Nat.* i. p. 508; *Cuv. & Val.* xv. p. 459; *Kner, Panzerwelse*, p. 13 (not *Bl. Schn.*).
Plecostomus, sp., *Gronov. Mus. Ichth.* i. p. 26. no. 69, and *Zoophyl.* no. 392.
Loricaria cirrhosa, *Bl. Schn.* p. 125. tab. 34.
—— carinata, *Casteln. Anim. Amér. Sud, Poiss.* p. 46. pl. 23. fig. 3.
Plecostomus flagellaris, *Gronov. Syst. ed. Gray*, p. 158.

Snout broad, of moderate length; eye of moderate size, its vertical diameter being two-thirds or one-half of the width of the interorbital space; orbit with a small notch in its posterior margin. Intermaxillary teeth few in number, long, twice as long as those of the mandible, which are more numerous. The labial fold very broad, with numerous papillæ and short barbels. The lower side of the head naked; the median scutes of the nape bicarinate. L. lat. 33–34. There are from eight to ten lateral scutes between the pectoral and ventral fins. Thorax and belly with numerous small, irregular scutes. The origin of the dorsal fin is scarcely before the vertical from the base of the ventrals. The length of the outer pectoral ray is one-sixth of the total (without caudal filament). The upper caudal ray produced into a long filament; fins with or without black dots.

Surinam and northern Brazil.

a–b. Fine specimens. Surinam. Purchased of M. Kappler.
c, d, e. Adult and half-grown.
f. Adult: skin. From Gronow's Collection.

2. Loricaria macrodon.

Kner, Loricar. p. 15. taf. 2.

Snout broad, the head being scarcely longer than broad; eye rather small, its vertical diameter being one-half of the width of the interorbital space; orbit with a very shallow notch behind, and with its upper margin slightly elevated and spinous. Intermaxillary and mandibulary teeth long, of equal length, and few in number. Maxillary barbels well developed, with a row of smaller barbels between them; the lower labial fold is very broad, and has numerous papillæ and short barbels. The lower side of the head naked, the lateral bones rough; the scutes of the nape with rough keels. L. lat. 32. There are eight or nine lateral scutes between the pectoral and ventral fins. Only a portion of the thorax and belly is covered with small, irregular scutes. The origin of the dorsal fin is before the vertical from the base of the ventrals. None of the caudal rays prolonged. Fins with black dots. (*Kner*.)

River Cujaba.

3. Loricaria læviuscula.

Cuv. & Val. xv. p. 476; *Kner, Loricar.* p. 17. taf. 3 (taf. 1, skeleton).

Snout broad, of moderate length; orbit of moderate size, with a shallow notch in its posterior margin; the width of the interorbital space is less than the horizontal diameter of the eye. Small teeth, subequal in size, in both jaws. The labial fold is very broad, with numerous small papillæ and short marginal fringes. The lower side of the head naked; scutes of the head and nape smooth. L. lat. 28. There are from five to seven lateral scutes between the pectoral and ventral fins. Belly and hinder part of the thorax with numerous small, irregular scutes. The origin of the dorsal fin is a little behind the vertical from the base of the ventrals. The upper caudal ray not prolonged. Fins with black dots; head and body with small brown dots.

Northern Brazil.

a–b. Fine specimens. River Capin. Purchased of Mr. Stevens.

4. Loricaria vetula.

Valenc. in d'Orb. Voy. Amér. Mérid. Poiss. pl. 6. fig. 2; *Cuv. & Val.* xv. p. 466.

Snout broad, of moderate length; eye of moderate size, its diameter being rather less than one-half of the width of the interorbital space; orbit without notch behind. Teeth in both jaws. The labial fold is very broad, with papillæ and fringes. Scutes of the nape keeled. Thorax and belly with numerous small, irregular scutes. The length of the outer pectoral ray is one-fourth of the total (without caudal filament); the upper caudal ray produced into a long filament. Fins with brown dots. (*Val.*)

Rio de la Plata.

5. Loricaria nudiventris.

Cuv. & Val. xv. p. 469.

Snout broad; the width between the pectoral fins is one-fifth of the total length; the diameter of the eye is one-half of the width of the interorbital space; orbit with scarcely any notch behind. Teeth in both jaws. The scutes of the nape keeled. The lower part of the thorax and the belly are naked to between the ventral fins; there are four lateral scutes between the pectoral and ventral fins. (*Val.*)

Rio San Francisco.

** Snout long and narrow, without bristles.

6. Loricaria rostrata.

Spix, Pisc. Bras. p. 5. tab. 3. figs. 1 & 2; *Kner, Loricar.* p. 19.

Snout long and narrow, the greatest width of the head being about one-half of its length. Eye small, its diameter being less than one-half of the width of the interorbital space; orbit without notch behind. Teeth fine, slender, in both jaws. Labial fold short, not fringed.

The lower side of the head naked. Scutes of the head and nape rough, but without keels; there are six lateral scutes between ventral and pectoral fins: the scutes covering the thorax and belly are regularly arranged in transverse series. The origin of the dorsal fin is before the vertical from the base of the ventral; its first ray is slightly prolonged; none of the caudal rays prolonged.

Brazil (Rio Branco).

*** Sides of the head with erectile bristles.

7. **Loricaria barbata.**

Kner, Loricar. p. 23. taf. 5.

Snout long and narrow; eye small; orbit without posterior notch; the diameter of the eye is one-third of the width of the interorbital space. Teeth small, numerous in both jaws. Opercles and the marginal scutes of the head with a band of erectile bristles. Scutes of the nape not keeled, the middle of the abdomen with three longitudinal series of scutes. The origin of the dorsal fin is somewhat in advance of that of the ventrals. (*Kner.*)

River Cujaba.

β. Teeth rudimentary, visible only in the lower jaw or entirely absent.

* Snout broad, of moderate length.

8. **Loricaria maculata.**

Plecostomus, sp., *Gronov. Mus. Ichth.* i. p. 25. no. 68, and *Zoophyl.* no. 391. tab. 2.
Loricaria maculata, *Bloch*, tab. 375. fig. 1; *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 6. fig. 3; *Cuv. & Val.* xv. p. 473; *Kner, Loricar.* p. 16.
—— amazonica, *Casteln. Anim. Amér. Sud, Poiss.* p. 46. pl. 23. fig. 2.
Plecostomus cataphractus, *Gronov. Syst. ed. Gray*, p. 158.

Snout broad, of moderate length; eye rather small, its vertical diameter being equal to, or somewhat less than, one-half of the width of the interorbital space, which is flat; posterior margin of the orbit with a deep notch, which is nearly as large as the eye. Teeth minute, and sometimes lost in one or in both jaws. Labial fold very broad, fringed behind. The lower side of the head naked. The scutes on the nape smooth, or with scarcely visible keels. L. lat. 31–32. There are five lateral scutes between the pectoral and ventral fins. The scutes with which the thorax and belly are covered are regularly arranged in transverse series. The two lateral ridges coalesce on or near the twentieth lateral shield. The origin of the dorsal fin is a little behind the vertical from the base of the outer ventral ray. The upper caudal ray slightly prolonged. Body with blackish spots, fins black-dotted.

Brazil and Guianas.

a–b. Fine specimens. British Guiana.
c. Adult: stuffed. Surinam.
d. Adult: bad state. Purchased of Mr. Bartlett.

9. Loricaria anus.

Valenc. in d'Orb. Voy. Amér. Mérid. Poiss. pl. 6. fig. 1; *Cuv. & Val.* xv. p. 470.

Snout broad, of moderate length; eye rather small, its vertical diameter being one-third of the width of the interorbital space; orbit with a shallow notch behind. Teeth minute or, perhaps, absent. Scutes on the nape smooth; thorax and belly shielded. The two lateral ridges remain separate to the posterior part of the tail, coalescing on or near the thirtieth lateral shield. Back with blackish cross-bands; fins with brown dots. (*Val.*)

Rio de la Plata.

10. Loricaria parahemiodon.

Parahemiodon typus, *Bleek. Compt. Rend. Acad. Sc. Amsterd.* 1862, xiv. p. 373.

Snout broad: the diameter of the eye is rather more than one-half of the width of the interorbital space; orbit with a deep notch behind. Teeth none in the upper jaw, those of the lower rudimentary. Labial fold exceedingly broad, extending backwards to the base of the pectorals. Thorax and belly with numerous small shields; there are five lateral scutes between the pectoral and ventral fins. The two keels running along the side of the body coalesce on or near the seventeenth shield of the lateral line. L. lat. 31. The origin of the dorsal fin is somewhat behind that of the ventrals. (*Blkr.*)

Surinam.

11. Loricaria platycephala.

Hemiodon platycephalus, *Kner, Loricar.* p. 25. taf. 6. fig. 2.

Head and body much depressed; head as broad as long; snout rather long, of moderate width, with the upper profile concave; the eye is small, behind the middle of the length of the head; orbit without posterior notch; its diameter is two-thirds of the width of the interorbital space; snout with a median groove above; margins of the snout with dense, short bristles directed backwards. Teeth absent in the upper jaw, few in number in the lower. Scutes of the nape keeled. L. lat. 31. Abdomen with three longitudinal series of large scutes; four lateral scutes between pectorals and ventrals. The origin of the dorsal fin is opposite to that of the ventrals; the outer pectoral and ventral rays short; the upper caudal ray prolonged. (*Kner.*)

Rio Cujaba.

** Snout rather produced and pointed in front.

12. Loricaria acuta.

Loricaria acuta, *Cuv. & Val.* xv. p. 472. pl. 452 (bad); *Kner, Loricar.* p. 21.

—— castanea, *Casteln. Anim. Amér. Sud, Poiss.* p. 46. pl. 23. fig. 4.

Snout rather elongate and pointed in front, the greatest width of the head being two-thirds of its length. Eye of moderate size; posterior margin of the orbit with a large notch, so that the diameter of the orbit and notch together is one-fourth, or nearly one-fourth, of the length of the head. The width of the interorbital space is a little less than the horizontal diameter of the eye. Teeth minute, rudimentary, those of the mandibles twice the number of the intermaxillary teeth. Labial fold broad and thick, without papillæ or fringes. The lower side of the head naked; scutes of the head rough, the roughnesses being small spines round the margin of the snout; the median scutes of the nape bicarinate. Thorax with three transverse series of small polygonal scutes; abdomen with 5–6 transverse series, each composed of one median piece and of a larger one on the sides; the three pieces are sometimes confluent into one broad scute. L. lat. 32. The origin of the dorsal fin is somewhat behind that of the ventrals. The upper caudal ray sometimes much prolonged.

Barra do Rio Negro.

13. **Loricaria nudirostris.**

Kner, Loricar. p. 22. taf. 4.

Snout rather produced and pointed, the greatest width of the head being five-eighths of its length. Eye of moderate size; the posterior margin of the orbit with a notch half as large as the eye; the width of the interorbital space is somewhat more than the horizontal diameter of the eye. Teeth minute, rudimentary, few in number. Labial fold broad, without fringes. The lower side of the head naked, with a broad band of rough scutes round the margin of the snout. Head rough above, with elevated lines; scutes of the nape bicarinate. L. lat. 31. Scutes of the thorax and abdomen rather large, regularly arranged in transverse series. The origin of the dorsal fin is a little behind that of the ventrals. Fins with black dots. (*Kner.*)

Barra do Rio Negro.

*** Snout long and narrow.

14. **Loricaria depressa.**

Hemiodon depressus, *Kner, Loricar.* p. 27. taf. 7. fig. 1.

Snout long and narrow, with its extremity slightly turned upwards; the head is three-fifths as broad as long, and its length is contained thrice and a fourth or thrice and a third in the total (without caudal). Eye of moderate size, its diameter being equal to the width of the interorbital space; orbit with a shallow notch behind. Teeth absent in the upper jaw, minute and rudimentary in the lower. Fold of the lower lip well developed, smooth; the lower side of the snout shielded, the vicinity of the mouth being naked. Scutes of the head and nape smooth; nape with a shallow median groove to the dorsal fin. The lower side of the thorax is covered with very small, the abdomen with larger irregular scutes. L. lat. 27. The origin of the dorsal fin is opposite to that of the ventrals; the upper caudal ray prolonged. (*Kner.*)

Rio Negro and Marabitanos.

15. Loricaria acipenserina.

Hemiodon acipenserinus, *Kner, Loricar.* p. 28. taf. 7. fig. 2.

Snout long and narrow, terminating in a spiny knob. Eye small, its diameter being one-half of the width of the interorbital space, which is concave; orbit with a triangular notch behind. Teeth absent in the upper jaw, minute and rudimentary in the lower. The lower side of the head naked. Scutes of the head and nape rough and keeled. Anterior part of the thorax naked; abdomen with five transverse series of large scutes, three in each series. The origin of the dorsal fin is somewhat behind the vertical from the base of the first ventral ray. The upper caudal ray prolonged. Upper parts and fins with black spots. (*Kner.*)

Rio Guaporé, Matogrosso.

(γ. Species the dentition of which is not, or imperfectly known.)

16. Loricaria lima.

Kner, Loricar. p. 25. taf. 6. fig. 1.

Snout broad, the head being not much longer than broad; the diameter of the eye is one-half of the width of the interorbital space; orbit with a deep notch behind. Mandibles with rather long teeth*. Sides of the head with long bristles; scutes of the nape bicarinate. L. lat. 29–30. Thorax and abdomen with small, irregular scutellæ. The origin of the dorsal fin is somewhat behind that of the ventrals. (*Kner.*)

Brazil.

17. Loricaria brunnea.

Hancock, Zool. Journ. iv. p. 247.

Teeth?

The scutes on the lower side of the trunk are not divided, reaching across from one side to the other; mouth without barbels. (*Hanc.*)

Orinoco.

100. ACESTRA.

Acestra, *Kner, Denkschr. Acad. Wiss. Wien,* 1853, vi. *Loricar.* p. 11.

One short dorsal fin, opposite to the anal; anal fin short; the outer ray of each fin somewhat thickened, flexible. Snout very long and narrow; mouth situated at the lower side of the snout, remote from its extremity, transverse, with a broadish posterior labial fold. Teeth in both jaws, small, bent, with a dilated, notched apex, in a single series; no teeth on the palate. Head and body completely cuirassed; tail depressed, long; eye rather small. Præoperculum immoveable; gill-opening very narrow. Formula of the fins: D. 1/6. A. 4–6. P. $\frac{1}{5\text{–}6}$. V. $\frac{1}{4\text{–}5}$.

Fresh waters of Brazil and Surinam.

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* In consequence of the bad condition of the single example known, Prof. Kner was unable to determine the dentition in the upper jaw.

1. Acestra acus.

? Loricaria scolopacina, *Filippi, Rev. et Mag. Zool.* 1853, p. 166.
Acestra acus, *Kner, Loricar.* p. 30. taf. 8. fig. 1.

Snout very long and narrow. the distance of its extremity from the gill-opening being considerably less than that of the latter from the origin of the dorsal fin; the extremity and margin of the snout densely covered with short bristles

Caraccas.

2. Acestra oxyrhyncha.

Kner, Loricar. p. 31. taf. 8. fig. 2.

Snout exceedingly long and narrow, the distance of the gill-opening from its extremity being more than that of the former from the origin of the dorsal fin. Margin of the snout with bundles of bristles, longitudinally arranged. Three longitudinal series of scutes on the belly; nineteen scutes between the base of the dorsal fin and the root of the caudal. (*Kner.*)

Rio Mamoré

3. Acestra amazonum.

Snout exceedingly long and narrow, the distance of the gill-opening from its extremity being equal to that of the former from the origin of the dorsal fin; snout entirely covered with small, rather tubercular scutes, without bristles. The length of the head (to the end of the occipital shield) is one-fourth of the total (with the caudal fin); eye round, small, its diameter being one-fourth of the width of the interorbital space. Seven scutes between dorsal fin and occiput, twenty-three between dorsal and caudal. Thorax and belly with two longitudinal series of large scutes. L. lat. 34. Tail much depressed. P. 1/6. V. 1/5, the outer ray rather thick and smooth. D. 1/6. A. 6. Fins with brown dots.

River Amazons.

a. Ten inches long. Santarem. From Mr. Bates's Collection.—This specimen is not in a good state of preservation, and has the caudal fin mutilated.

4. Acestra gladiolus.

Snout exceedingly long and narrow, sword-shaped, the distance of the gill-opening from its extremity being more than that of the former from the origin of the dorsal fin; snout entirely covered with rather smooth shields, without any bristles. The length of the head (to the end of the occipital shield) is scarcely more than one-third of the total (without caudal). The soft parts surrounding the mouth are situated in an elliptical cavity, which is two-thirds as broad as long; the maxillary barbel is rather short, and the posterior labial fold moderately developed. Eye round, small, its diameter being one-third of the width of the interorbital space. Scutes with small granulations longitudinally arranged; occipital shield with two slight divergent keels posteriorly. Seven scutes between dorsal fin and occiput, twenty-two between dorsal and caudal. The space between the cavity of the mouth and the base of the pectoral fins is covered with four longitudinal rows of scutes arranged in three transverse series; belly with two longitudinal rows of large scutes, six in each row. L. lat. 34; the lateral ridges are scarcely visible, and coalesce above the anal fin. Tail much depressed. P. 1/5; V. 1/4; the outer ray of the pectoral and ventral is slender and but little thickened. D. 1/6. A. 4. Caudal fin but little developed, with the upper and lower rays somewhat prolonged. Uniform olive-brown; the outer rays of the fins with brown dots.

Rio Cupai.

a–c. From 3 to 5 inches long. Purchased of Mr. Stevens.

Head partially osseous and rough. Body naked or with bony plates on the back: *Sisorina*.

101. SISOR.

Sisor, *Ham. Buch. Fish. Gang.* p. 207.

Head depressed, spatulate; trunk depressed; tail long and thin. One rather short dorsal fin; anal short; ventrals seven-rayed, inserted below the dorsal. Head partially osseous, rough; a series of bony plates along the median line of the back; lateral line rough. Eyes very small. Mouth inferior, small, transverse, with barbels· teeth none. Gill-opening narrow, with moveable opercles.

Northern India.

1. Sisor rhabdophorus.

Ham. Buch. Fish. Gang. pp. 208, 379; *Gray, Ind. Zool.*

B. 4. D. 7. A. 5. C. 9. P. 1/8. V. 7.

The upper caudal ray produced into a very long filament.

Rivers of Northern Bengal.

a–b. Presented by Sir A. Smith.

Description.—Head and trunk rather broad, much depressed; tail low, tapering, long. Snout long, spatulate, the eye being nearer to the gill-opening than to the end of the snout. The greatest width of the head is between the gill-openings, and two-thirds of its length (to the end of the operculum); its length is one-fifth of the total (without caudal), but one-fourth only, if taken to the end of the occipital process. The frontal and parietal portions have longitudinal ridges which converge towards the point of the occipital process; the interorbital space rather concave; the remainder of the head is covered with thin skin. The upper profile of the snout is slightly arched; the intermaxillaries and the cleft of the mouth are entirely on the lower side of the head, and small: the intermaxillaries are small, and form together a crescent-shaped upper lip. The maxillaries terminate in a barbel, which is dilated into a membrane at its base, and extends backwards to the root of the pectoral spine; the lower lip is produced on each angle of the mouth into a long flap, which is reflected, forming a sort of channel, and terminating posteriorly in barbel-like fringes which extend as far backwards as the maxillary barbels; a pair of minute barbels between these two flaps. The upper jaw projects beyond the lower.

The eyes are small, directed upwards, rather longer than high, with the pupil horizontal and elliptic; the distance between them is equal to two of their diameters. Nostrils round, open, close together, separated by a small lobe, and situated somewhat nearer to the eye than to the end of the snout.

The occipital and suprascapulary processes are of equal length, about one-third as long as the snout; the humeral bones form a broad suture together, and are prolonged behind into a process situated on each side of the thorax and extending beyond the root of the pectoral; all the lower parts of the humeri are covered with skin. A series of osseous plates commences before the dorsal, and is continued to the root of the caudal: the first is the largest and trilobate, the central lobe extending forward, but not touching the occipital process; five plates along each side of the base of the dorsal fin; all the following plates with a central, sharp, longitudinal ridge; about the ninth plate has its ridge terminating in a short immoveable spine pointing backwards*. The lateral line is covered with small, irregular roughnesses, the remainder of the body being naked. The extremity of the tail is angular and rather broader than high.

Dorsal fin rather higher than long; its first ray is feeble, finely serrated in front, and two-thirds of the length of the head. Anal fin somewhat nearer to the vent than to the root of the caudal. Caudal fin slightly forked; its uppermost ray is strong, and may be as long as the body. The pectoral fin does not quite reach to the root of the ventral; its spine is strong, compressed, slightly bent, with an outer serrated edge. The ventral terminates at a great distance from the anal fin, the vent being in the middle of its length. Brownish, marbled with darker.

102. ERETHISTES.

Erethistes, *Müll. & Trosch. Hor. Ichthyol.* iii. p. 12.

Head and trunk broad, tail thin; head large, with osseous, rough ridges; occipital, scapular, and humero-cubital processes not covered by the skin. Dorsal fin rather short, with a strong spine and with six soft rays; adipose and anal fins short; ventrals six-rayed, inserted below the dorsal. Body with minute tubercles arranged in longitudinal series. Eyes small. Mouth small, inferior, with small teeth in both jaws; palate toothless. Apparently a small barbel to each maxillary; no other barbels.

Assam.

Although I have not seen this fish, I conclude, from the characters given by Müller and Troschel, that it is allied to *Sisor*; consequently that it has the nostrils placed close together, and that it has probably mandibulary flaps, which, however, must be much less developed than in *Sisor*, as no mention of them is made in the original description.

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* This spine has been considered by Hamilton as a second fin.

1. Erethistes pusillus.

Müll. & Trosch. l. c. pl. 1. fig. 3.

B. 6. D. 1/6. A. 11. V. 6.

Head as broad as long, its length being equal to the height of the body, and one-third of the total. Dorsal and pectoral spines very strong. (*M. & T.*)

Assam.

The typical specimen is not quite 2 inches long, and in the Berlin Museum.

d. Head and body covered with skin; a pair of nasal barbels: *Exostomatina.*

103. PSEUDECHENEIS.

Pseudecheneis, *Blyth, Journ. As. Soc. Beng.* xxix. p. 154.

Adipose fin of moderate length; a short dorsal with one spine and with six rays; anal fin rather short. Barbels eight, those of the maxillaries very broad at their base. Mouth small, inferior; teeth villiform; palate edentulous. Head depressed, covered with soft skin above; eyes small, superior. Caudal fin forked; pectorals horizontal, with a thoracic adhesive apparatus between, formed by transverse plaits of the skin. Ventrals with six rays. Gill-opening small, not extending on to the lower surface of the head.

Himalayas.

1. Pseudecheneis sulcatus.

Glyptosternon sulcatus, *M'Clell. Calc. Journ. Nat. Hist.* ii. p. 587. pl. 6, lower figs.

D. 1/6. A. 11. P. 1/13.

The length of the head is one-fifth of the total (without caudal); eye very small, situated behind the middle of the head; the lower surface of the head with numerous papillæ, especially at the chin; the maxillary barbels are much shorter than the head. The first dorsal spine flexible; pectoral very large, extending beyond the root of the ventral; the outer pectoral and ventral rays broad, flexible, with numerous fine transverse folds below; the free portion of the tail very slender; caudal deeply forked.

Khasya Mountains.

a. Type of the species: 3⅔ inches long. From Mr. Griffith's Collection.

104. EXOSTOMA.

Exostoma, *Blyth, Journ. As. Soc. Beng.* xxix. p 155.

Adipose fin long; dorsal fin short, with a very slender or rudimentary spine and with six rays; anal short. Barbels six: two to the nostrils, two to the maxillaries, and two below the mandible. Mouth inferior, the lips being reflected, lobate, and spread continuously round the mouth, so as to form a broad flat sucker. Teeth in two separate patches above and below, leaving a suctorial centre between them; palate edentulous. Head depressed, covered with soft skin above; eyes small. Gill-openings very small, not extending on to the lower surface of the head. Caudal fin forked; pectorals horizontal, without adhesive apparatus between; ventrals with six rays, inserted below the end of the dorsal fin.

East Indian Continent.

1. **Exostoma labiatum.**

Glyptosternon labiatus, *M'Clell. Calc. Journ. Nat. Hist.* ii. p. 588.

D. 1/6. A. 6. P. 1/12.

Head depressed, obtusely rounded, as broad as long, its length being nearly one-fifth of the total (without caudal); eyes very small; mouth inferior, transverse, narrow, double crescent-shaped (⌢⌢); the lower jaw surrounded by a broad flap-like lip, divided into a median lobe and into a pair of lateral ones; there is a very small appendage in each notch between the median and lateral lobes; these appendages may be considered as a fourth pair of barbels. The free portion of the tail is as high as long. The first dorsal ray scarcely spinous. The distance between the dorsal and adipose fins is two-thirds of the length of the latter. Caudal fin slightly forked, the lower lobe being scarcely longer than the upper. The pectoral and ventral fins are obliquely inserted, so that the inner rays are situated above the outer ones; the outer rays dilated, transversely striated below. The pectoral terminates at a considerable distance from the ventral.

Mishmee Mountains (Assam).

a. Type of the species 3½ inches long. From Mr. Griffith's Collection.

2. **Exostoma berdmorei.**

Blyth, Journ. As. Soc. Beng. xxix. p. 155.

D. 1/6. A. 6. P. 1/10.

Maxillary barbels extending beyond the base of the pectoral; lower caudal lobe much broader and longer than the upper. Olive-brown above, clouded with darker. (*Blyth.*)

Tenasserim (4 inches long).

Fourteenth Group. ASPREDININA.

Proteropodal Siluroids with the anterior and posterior nostrils remote from each other, and without nasal barbel. Lower lip not reverted. Humero-cubital process much developed and prolonged.

a. Anal fin short.

105. BUNOCEPHALUS.

Bunocephalus, sp., *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 95
Bunocephalus, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 118.

Adipose fin none; one short dorsal with five rays and without pungent spine, situated above the ventrals, which are six-rayed; anal short; pectorals with a strong, depressed, denticulated spine. Barbels six: one to each maxillary, one to each angle of the mouth, and one behind each mandibulary barbel. Both jaws with patches of villiform teeth; palate smooth. Head and body with osseous protuberances and crests, and covered with tubercular skin. Eyes very small. Head broad and much depressed, but higher than the hinder part of the tail. Gill-opening reduced to a narrow foramen before the pectoral fin.

Tropical America.

1. Bunocephalus verrucosus.

Platystacus verrucosus, *Bloch*, xi. p. 63. taf. 373. fig. 3.
Silurus verrucosus, *Bl. Schn.* p. 379.

B. 5. D. 5. A. 6. P. 1/8. V. 6.

The origin of the dorsal fin is in the middle between the end of the snout and the root of the tail. The maxillary barbel does not extend to the root of the pectoral. Each side of the tail with four rows of warty tubercles. Brown. (*Bl.*)

? Surinam.

2. Bunocephalus gronovii.

Aspredo, sp., *Gronov. Mus. Ichth.* ii. p. 5. no. 153. tab. 5. fig. 3, and *Zoophyl.* p. 102. no. 325.
Aspredo verrucosa, *Gronov. Syst. ed. Gray*, p. 137 (not *Bloch*).
Bunocephalus gronovii, *Bleek. Prodr. Silur.* p. 329.
—— verrucosus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 96.

D. 5. A. 6. P. 1/5. V. 6.

The distance between the end of the snout and the origin of the dorsal fin is one-third, or nearly one-third, of the total length (with the caudal fin), the length of the head to the gill-opening is rather more than one-seventh. Upper jaw but little prominent. The maxillary barbel extends to the root of the pectoral. The length of the caudal fin is contained five times and a third in the total; the dorsal is inserted nearer to the end of the snout than to the root of the caudal. Hind portion of the tail as high as broad. Brownish. clouded and spotted with darker.

Barra do Rio Negro; Demerara.

a. Fine specimen. Demerara. Presented by Dr. Hancock.

106. BUNOCEPHALICHTHYS.

Bunocephalichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 118.

Adipose fin none; one rudimentary two-rayed dorsal fin, situated somewhat in advance of the ventrals, which are six-rayed; anal short; pectorals with a strong, depressed spine. Barbels six: one to each maxillary, one to each angle of the mouth, and one on each side of the chin. Both jaws with bands of villiform teeth; palate smooth. The upper surface of the head with osseous protuberances; skin of the body warty. Eyes very small. Head broad and depressed, lower than the hinder part of the tail, which is compressed. Gill-opening reduced to a narrow foramen before the base of the pectoral fin.

Rio Branco.

1. Bunocephalichthys hypsiurus.

Bunocephalus hypsiurus, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 98. taf. 1. fig. 1.

D. 2. A. 5. P. 1/5. V. 6.

The distance of the dorsal fin from the end of the snout is two-fifths of the total length (without caudal). The tubercles on the upper surface of the head are arranged in two series, each of which is curved outwards in the nuchal region. The maxillary barbels extend to, or nearly to, the root of the pectoral; mandibulary barbels very short. Tail with an upper and lower undulated ridge. Pectoral spine serrated on its inner margin; caudal fin rounded. Brownish, clouded with darker; yellow spots along the lateral line. (*Kner.*)

Rio Branco.

b. Anal fin long.

107. ASPREDO.

Aspredo, *L. Mus. Ad. Fred.* p. 73.

Aspredo, Platystacus (*Bl.*), Aspredinichthys, *Bleek. Nederl. Tydschr. Dierk.* 1863, p. 117.

Adipose fin none; dorsal short, without pungent spine; anal very long, not united with the caudal. Head broad, much depressed; tail very long and slender. Villiform teeth in both jaws. Barbels not less than six, one of which is attached to each intermaxillary; none at the nostrils. Eyes very small. Gill-opening very narrow, reduced to a foramen before the pectoral spine, which is very strong, much depressed, and strongly denticulated. Head covered with soft skin. Ventral fins six-rayed, situated below the dorsal fin.

Guiana.

Bloch and Valenciennes have found the belly of several individuals of this genus covered with short, soft appendages, each of which had a styliform base and a discal dilatation at the end. Whilst the former considered this peculiarity as a specific character, the latter pointed out that these appendages are developed at a certain age; but whereas, at p. 430, he first says that he has observed them only in certain females, he afterwards, at p. 440, describes a male provided with the same organs.

I am enabled, by the examination of a female of *A. batrachus*, to show that the fishes of this genus belong to those Siluroids which take care of their progeny, and that the appendages mentioned serve for the purpose of keeping the eggs attached to the belly of the mother. The ovaria of the fish examined are two nearly empty sacs with thick walls, as if the ova had just been excluded; some of them, which had not been developed, still remained between the folds of the interior. The whole lower surface of the belly, thorax, throat, and even of a portion of the pectoral fins showed numerous shallow, round impressions, to which a part of the ova still adhered. The latter are spread out in a single layer, and being globular bodies, leave small interspaces between them. These interspaces are filled up by the appendages mentioned, and the terminal dilatation of the latter is of essential help in keeping the ova in their position. If the pouches on the back of the *Pipa* were shallowed to mere impressions, and the walls between them severed into flaps, we should have the same arrangement as in *Aspredo*.

Having examined several mature males and females of *Aspredo*, I come to the conclusion that only the females carry with them their ova, and that they only are provided with those appendages. It is more than probable that towards the spawning-time the skin of the lower parts becomes spongy; that, after having deposited the eggs, the female attaches them to it by merely lying over them; and that the spongy substance between the eggs is absorbed by the pressure of the latter, except in the interspaces, where it remains in the form of the appendages described. The eggs, however, are retained not only by the latter, but they adhere to the whole surface of the hollow, although loosely. When the eggs are hatched, the excrescences disappear, and the skin of the belly becomes smooth as before.

The eggs have a diameter of from half to two-thirds of a line.

1. **Aspredo batrachus.**

Mystus no. 10, *Artedi, in Seba,* iii. p. 86. tab. 29. fig. 10.
Aspredo batrachus, *Linn. Mus. Ad. Fred.* p. 73; *Amœn. Acad.* i. p. 311. tab. 1. fig. 5 (Aspredo); *Gronov. Syst. ed. Gray,* p. 137.
Silurus aspredo, *Linn. Syst. Nat.* i. p. 502.
Aspredo, sp., *Gronov. Zoophyl.* p. 102. no. 326.
Platystacus lævis, *Bloch,* viii. p. 58; *Bl. Schn.* p. 373.
Aspredo lævis, *Cuv. & Val.* xv. p. 431.

B. 5. D. 5. A. 53–57. P. 1/7. V. 6. Vert. 7/59.

Upper jaw broad, spatulate, much projecting beyond the lower; barbels eight: one belonging to the maxillary, and extending to, or somewhat beyond, the gill-opening; it is dilated into a broad membrane at its base, to which another small barbel is attached; the third pair of barbels is inserted at the angles of the mouth, and the fourth at some distance behind the third. Upper part of the snout perfectly smooth; eye minute. Each intermaxillary with a narrow transverse band of small teeth, both bands being separated in the middle; lower jaw with a narrow band of minute villiform teeth. The length of the head, to the end of the occipital process, is considerably less than one-fourth of the total (the caudal fin included). The first dorsal ray and the outer caudal rays sometimes slightly prolonged.

British, Dutch, and French Guianas.

a–c, d. Adult and half-grown. British Guiana. Purchased of Mr Scrivener.
e. Adult. British Guiana. Presented by Prof. R. Owen.
f. Adult: Cayenne.
g, h, i. Adult: stuffed. Surinam.
k. Adult: skeleton.

2. Aspredo sicyephorus.

Aspredo sicuephorus, *Cuv. & Val.* xv. p. 439.

D. 5. A. 56. P. 1/6. V. 6.

Closely allied to *A. batrachus.* Barbels eight, as in that species; no spines above the snout; the length of the head, to the end of the occipital process, is more than one-fourth of the total (with the caudal). Brownish above, with white dots; anal with black margin. (*Val.*)

Mana.

3. Aspredo cotylophorus.

Mystus, sp., *Artedi, in Seba,* iii. p. 86. no. 9. tab. 29. fig. 9.
Batrachus, sp., *Klein, Miss. Pisc.* v. p. 86. no. 11. tab. 4. figs. 7 & 8.
Aspredo, sp., *Gronov. Mus. Ichth.* i. p. 8. no. 26, and *Zoophyl.* no. 324.
Platystacus cotylephorus, *Bloch,* viii. p. 54. taf. 372; *Bl. Schn.* p. 372; *Lacép.* v. p. 78.
Silurus hexadactylus, *Lacép.* v. p. 82.
Aspredo sex-cirrhis, *Cuv. & Val.* xv. p. 441; *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 93.
—— spectrum, *Gronov. Syst. ed. Gray,* p. 137.

D. 5. A. 57. P. 1/6. V. 6.

Upper jaw spatulate, moderately broad, and projecting beyond the lower; barbels six: one belongs to the maxillary, extends to the root of the pectoral, and is dilated at its base, but has no other barbel attached to it; the second pair of barbels is inserted at the angles of the mouth, and the third at some distance behind the second. Upper part of the snout smooth; eye very small. Each intermaxillary with a patch of villiform teeth, which is rather broader than long; both patches are separated by a very narrow interspace; lower jaw with a narrow band of teeth. The length of the head, to the end of the occipital process, is one-fourth of the total (without caudal fin). The first dorsal ray not, the outer ones of the caudal slightly prolonged. Light brownish, marbled with dark brown.

British and Dutch Guianas.

a. Fine specimen. British Guiana. Purchased of Mr. Leadbeater.
b. Half-grown. Surinam. Purchased of Mr. Frank.
c. Fine female specimen.
d. Adult.

4. Aspredo nematophorus.

Platystacus nematophorus, *Bleek. in Compt. Rend. Acad. Sc. Amsterd.* 1862, xiv. p. 371.

B. 5. D. 5. A. 57. P. 1/7. V. 6.

Closely allied to *A. cotylophorus.*

Upper jaw spatulate, projecting beyond the lower; barbels six, as in that species. Upper part of the snout smooth; eye very small. The length of the head, to the gill-opening, is one-tenth of the total (with the caudal fin). The first dorsal ray is produced into a filament; the outer caudal rays not prolonged. Light brownish, marbled with dark brown.

Surinam.

The typical specimen is in the Leyden Museum.

5. Aspredo filamentosus.

Cuv. & Val. xv. p. 437. pl. 450.

D. 5. A. 50. P. 1/8. V. 6.

Upper jaw rather pointed; two maxillary barbels on each side, one of which is very small, and attached to the base of the principal one; the latter extends to the gill-opening. A series of fine barbels along each side of the sternal and abdominal regions. No spines on the snout; eye very small. The first dorsal ray is produced into a very long filament. The hinder anal rays and the caudal fin black.

Guianas.

a. Adult. Demerara. Purchased of Mr. Scrivener.

6. Aspredo tibicen.

Aspredo tibicen (*Temminck*), *Cuv. & Val.* xv. p. 438.

D. 5. A. 58. P. 1/8. V. 6.

Upper jaw rather pointed, and projecting beyond the lower. Two maxillary barbels on each side, one of which is small and attached to the base of the principal one; the latter extends to the gill-opening and is dilated into a broad membrane at its base. The lower side of the head with rather numerous minute barbels arranged in four longitudinal series, the middle of which extend backwards over the sternal region. A transverse series of four small recurved spines on the upper side of the snout, two of them belonging to the ethmoid, and two to the nasal bones; eye very small. Each jaw with a continuous cross-band of villiform teeth. The length of the head, to the end of the occipital process, is one-fifth of the total (the caudal fin included). The first dorsal ray is considerably prolonged. Back with large brown spots; anal black, with the anterior portion white.

British and Dutch Guianas.

a–b. Adult. British Guiana. Presented by Sir R. Schomburgk.
c. Adult. British Guiana. From Mr. Snellgrove's Collection.
d–e. Young. Presented by the Royal College of Surgeons.

Seventh Subfamily.
SILURIDÆ OPISTHOPTERÆ.

The rayed dorsal fin is always present, short, and placed above or behind the middle of the length of the body, above or behind the ventrals, which, however, in one genus are absent; anal short. Nostrils remote from each other; if a nasal barbel is present, it belongs to the anterior nostril. Lower lip not reverted. The gill-membranes are not confluent with the skin of the isthmus.

South America.

Fifteenth Group. NEMATOGENYINA.

Dorsal fin above the ventrals.

108. HEPTAPTERUS.

Heptapterus, *Bleek. Prodr. Silur.* p. 197.

Adipose fin long, low, confluent or nearly continuous with the caudal; a short dorsal fin with seven rays, the first being scarcely spinous; anal fin of moderate length. Barbels six. Palate edentulous. Head and body covered with soft skin, much elongate; eyes small. Caudal fin obliquely rounded; ventral fin with six rays, inserted below the dorsal.

South America.

1. Heptapterus surinamensis.

Bleeker, Versl. in Mededeel. Akad. Wet. Amsterd. 1862, xiv. p. 387.

B. 8–9. D. 7. A. 18. P 9.

The height of the body is rather less than one-half of the length of the head, which is one-sixth of the total (without caudal); jaws equal in length. The maxillary barbel extends nearly to the base of the pectoral. The adipose fin is not confluent with the caudal, and its distance from the dorsal equals its length; the first ventral ray is situated before the vertical from the origin of the dorsal fin. (*Bl.*)

Surinam.

2. Heptapterus mustelinus.

Pimelodus mustelinus, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 2. fig. 1; *Cuv. & Val.* xv. p. 165.

B. 9. D. 7. A. 18. P. 8. Vert. 13/41.

The height of the body is one-half of the length of the head, which is one-seventh of the total (with the caudal); jaws equal in length. The maxillary barbel extends to the gill-opening. Caudal fin obliquely rounded; adipose fin confluent with caudal; ventrals inserted below the dorsal.

Rio de la Plata.

109. NEMATOGENYS.

Nematogenys, *Girard, in Proc. Acad. Nat. Sc. Philad.* 1854, p. 198.

Adipose fin none. Dorsal fin short, placed in the middle of the height of the body, above the ventral fin, without pungent spine; anal short; caudal rounded. Teeth villiform, forming a band in both jaws; palate toothless. Barbels six: two to the nostrils, one to each maxillary, and a pair to the mandible. Eyes small. Head covered with soft skin, not armed. Gill-openings rather wide, subcontiguous at the throat. Ventrals six-rayed.

Chile.

1. Nematogenys inermis.

Trichomycterus inermis, *Guich. in Gay, Hist. Chil. Zool.* ii. p. 312, *Atl. Ictiol.* lam. 9. fig. 2.

Nematogenys inermis, *Girard, in U. S. Nav. Astron. Exped. Zool.* p. 240. pl. 32.

B. 12. D. 10. A. 11. P. 1/7. V. 6.

The maxillary barbels extend to, or somewhat beyond, the base of the pectorals; nasal barbels shorter than those of the mandible. Yellowish, with numerous blackish spots.

Chile.

Sixteenth Group. TRICHOMYCTERINA.

The rayed dorsal fin is behind the ventrals, if the latter are present.

110. TRICHOMYCTERUS*.

Trichomycterus, *Valenc. in Humb. Observ. Zool.* ii. p. 347.

Pygidium, *Meyen, Reise,* i. p. 475; *Wiegm. Arch. Naturgesch.* 1835, ii. p. 269.

Adipose fin none†. Dorsal fin short, without pungent spine, placed behind the middle of the body, and behind the ventral fins; anal short; caudal truncated. Teeth villiform, in broad bands in the jaws; palate toothless; cleft of the mouth rather narrow, with a pair of maxillary barbels on each side; a pair of slender nasal barbels. Eyes small, directed upwards. Head covered with soft skin. Operculum and interoperculum armed with a band of small osseous prickles. Gill-openings rather wide, nearly continuous across the throat. Ventrals five-rayed.

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* 1. Trichomycterus incæ, *Cuv. & Val.* xviii. p. 496.—Rio Guatanai.

2. —— pentlandii, *Casteln. Anim. nouv. Amér. Sud, Poiss.* p. 49. pl. 24. fig. 1. —Near Sarayacu.

3. —— punctatissimus, *Casteln. l. c.* fig. 3.—Araguay.—In the two last species the dorsal fin would appear to be placed above the ventral, if the figures be correct.

† A series of rudimentary caudal rays extends forwards towards the dorsal and anal fins, and is covered with fat in well-fed individuals.

South America; extending from the shores of the Pacific and Atlantic into the Andes, to an elevation of 15,000 feet.

1. **Trichomycterus dispar.**

Pygidium dispar, *Tschudi, Faun. Per. Ichthyol.* p. 22. taf. 3; *Günth. Proc. Zool. Soc.* 1859, p. 90.
Trichomycterus punctulatus, *Cuv. & Val.* xviii. p. 488. pl. 552 (adult female).
—— gracilis, *Cuv. & Val.* xviii. p. 497 (young).
—— barbatula, *Cuv. & Val.* xviii. p. 498.
—— pictus, *Casteln. Anim. nouv. Amér. Sud, Poiss.* p. 50. pl. 24. fig. 2 (bad).

B. 8. D. 10–11. A. 7–8. P. 9. V. 5. Vert. 22/15.

The length of the head is nearly equal to the height of the body, and one-sixth or one-seventh of the total. The origin of the dorsal fin is in the middle of the distance between the occiput and the end of the caudal fin. Mature specimens have the upper ray of the pectoral prolonged into a short filament. Males uniform brownish grey above, whitish below; females with numerous small dark-brown spots on the back.

Alpine rivers of Peru and Guayaquil.

a. Male, 9 inches long. Western Ecuador. From Mr. Fraser's Collection.
b. Female, 5½ inches long. River Rimac, Peru. Presented by Professor W. Nation.
c. Adult. From Mr. Pentland's Collection.
d–f, g, h. Young. Lake Titicaca. From Mr. Pentland's Collection (*T. barbatula*).
i–k. Young. Rio de Pontezualo. From Mr. Pentland's Collection.
l–n. Young. Andes de la Paz. From Mr. Pentland's Collection (*T. barbatula*).
o–p, q–t. Young. Guasacona. From Mr. Pentland's Collection (*T. gracilis*).
u. Many young specimens. Rio de Azangaro. From Mr. Pentland's Collection (*T. gracilis*).
v, w, x–z. Young. From Mr. Pentland's Collection.
α. Young.

2. **Trichomycterus maculatus.**

Trichomycterus maculatus, *Cuv. & Val.* xviii. p. 493.
?Thrichomycterus macræi, *Girard, in U. S. Naval Astronom. Exped. Zool.* p. 245.

D. 15. A. 9. P. 9. V. 5.

Shorter than *T. areolatus*; dorsal fin low and long; pectoral without prolonged ray. Back and sides yellowish, with greyish spots. (*Val.*)

Santiago (Chile).

3. Trichomycterus areolatus.

Trichomycterus areolatus, *Cuv. & Val.* xviii. p. 492.
? Thrichomycterus maculatus, *Girard, in U. S. Naval Astronom. Exped. Zool.* p. 243. pl. 34. figs. 1–3.

B. 8. D. 13. A. 8. P. 8. V. 5.

The length of the head is more than the height of the body, and nearly one-seventh of the total. The origin of the dorsal fin is in the middle between the occiput and the end of the caudal fin. None of the pectoral rays are prolonged. Brownish olive, with blackish spots.
Chile.

a, b. Adult. Chile.

4. Trichomycterus nigricans.

Cuv. & Val. xviii. p. 494.

B. 7. D. 11. A. 10. P. 9. V. 5.

Barbels short, scarcely extending beyond the eyes; the first dorsal ray prolonged into a filament. Uniform blackish above. (*Val.*)
Sta Catharina (Brazil). (Chile?)

5. Trichomycterus rivulatus.

Cuv. & Val. xviii. p. 495.

D. 8. A. 7.

Nasal and maxillary barbels extending beyond the eye. Brown, with undulated white lines. (*Val.*)
Guasacona.

6. Trichomycterus tænia.

Kner, Sitzgsber. Acad. Wiss. München. 1863, p. 228.

D. 8. A. 6.

Head heart-shaped, becoming narrower towards the snout, one-seventh of the total length. Caudal fin truncated. Body with a blackish longitudinal band, above which there are series of dark dots. (*Kner.*)
Western Andes of Ecuador.

7. Trichomycterus laticeps.

Kner, l. c.

D. 9. A. 7.

Head much depressed, subquadrangular, one-seventh of the total length; the width of the mouth is more than one-half of the length of the head. Sides of the trunk with black spots, and with from sixteen to twenty whitish cross-streaks. (*Kner.*)
Western Andes of Ecuador.

111. EREMOPHILUS.

Eremophilus, *Humboldt, Observ. Zool.* i. p. 17.

Adipose fin none; dorsal fin short, without pungent spine, placed behind the middle of the body; ventral fin none; anal short, caudal truncated. Teeth villiform, forming bands in the jaws; palate toothless. A pair of maxillary barbels on each side, a pair of slender nasal barbels. Eyes small. Head covered with soft skin. Operculum and interoperculum armed with patches of small osseous prickles.

Andes.

1. Eremophilus mutisii.

Humb. l. c. pl. 6; *Cuv. & Val.* xviii. p. 500. pl. 553.

B. 8. D. 11. A. 9. P. 9.

The length of the head is contained six times and a third in the total. Yellowish, with reticulated brown lines and dots.

Bogota.

112. PARIODON.

Pareiodon, *Kner, Sitzgsber. Wien. Acad.* 1855, xvii. p. 161.
Centrophorus, *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 167*
Astemomycterus, *Guichen. in Rev. et Mag. Zool.* 1860, xii. p. 525.

Adipose fin none. Dorsal fin short, without pungent spine, placed behind the middle of the body and behind the ventral fins; anal short; caudal forked. Jaws with a single series of flat, truncated incisors; palate toothless; cleft of the mouth rather narrow, with a pair of maxillary barbels on each side; no other barbels. Eyes very small. Head covered with soft skin; operculum and interoperculum armed with a stripe of small osseous prickles. Gill-openings rather narrow, only a narrow fold of the gill-membranes running across the throat. Ventrals five-rayed, inserted behind the middle of the body.

Brazil.

1. Pariodon microps.

Pareiodon microps, *Kner, l. c.* c. fig.
Trichomycterus pusillus, *Casteln. Anim. nouv. Amér. Sud, Poiss.* p. 50. pl. 24. fig. 4 (bad).

D. 9. A. 7. P. 6.

Body elongate, its height being about one-eighth of the total length (without caudal). Barbels short. Coloration uniform.

Araguay, River Amazons.

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* Dr. Kner proposes this second name, because he considers the first, *Pariodon*, as preoccupied by Valenciennes's genus of Characinoids, *Parodon*: both names, as he thinks, being composed of *παρεια*, cheek, and *ὀδοὺς*. We need hardly remark that this is incorrect, the name given by Valenciennes being derived from *παρα*. The similarity of the two names is great, but it does not appear to justify an alteration; and the second name proposed by Dr. Kner is altogether inadmissible, because this is really preoccupied.

Eighth Subfamily.
SILURIDÆ BRANCHICOLÆ.

The rayed dorsal fin is present, short, and placed behind the ventrals; anal short. Vent far behind the middle of the length of the body. Gill-membranes confluent with the skin of the isthmus.

Seventeenth Group. STEGOPHILINA.

A single maxillary barbel on each side.

113. STEGOPHILUS.

Stegophilus, *Reinhardt, in Naturhist. Foren. Vidensk. Meddel.* 1858, p.

Adipose fin none; dorsal fin short, without pungent spine, placed behind the ventrals, which are inserted behind the middle of the body; anal short; caudal truncated. Teeth small, forming bands in the jaws. The vomerine teeth are present, forming a patch which is confluent with the intermaxillary band, and situated quite in front of the jaw. Cleft of the mouth inferior, with a single barbel to each angle of the mouth. Eyes rather large. Head covered with soft skin. Operculum and interoperculum armed with spines. Gill-openings narrow, separated by a broad isthmus. Ventrals five-rayed.

Small fishes from Brazil.

1. Stegophilus insidiosus.

Reinhardt, l. c. tab. 2.

D. 9. A. 7. P. 6. V. 5.

The length of the head is more than the depth of the body, and one-seventh of the total. Head longer than broad, with the upper jaw produced. Barbel very small. (*Reinh.*)

Rio das Velhas.

114. VANDELLIA.

Vandellia, *Cuv. & Val.* xviii. p. 386.

Adipose fin none; dorsal fin short, without pungent spine, placed behind the ventrals, which are inserted behind the middle of the body; anal short; caudal truncated. Teeth none in the jaws; a transverse series of long pointed teeth in front of the vomer; cleft of the mouth inferior, with a single barbel to each angle of the mouth.

Eyes small. Head covered with soft skin. Operculum and angle of præoperculum (?) armed with spines. Gill-openings rather narrow, separated by a broad isthmus. Ventrals six-rayed.

Small fishes from South America.

These fishes are accused of entering and ascending the urethra of persons while bathing, causing inflammation, and sometimes death. Although this story is repeated by most travellers in the Brazils, none of them have ever seen a case confirmatory of it.

1. **Vandellia cirrhosa.**

Cuv. & Val. xviii. p. 386. pl. 547.

D. 8. A. 10. P. 8. V. 6.

Body elongate, rounded, its depth being equal to the length of the head, and one-tenth of the total. Head depressed, as broad as long, with the upper jaw produced. Barbel about half as long as the head. Five teeth on the vomer, the middle of which is the longest.

River Amazons.

2. **Vandellia plazæ.**

Vandellia plazaii, *Casteln. Anim. Amér. Sud, Poiss.* p. 51. pl. 28. fig. 1.

Body very elongate, its depth being less than the length of the head, which is one-thirteenth of the total. Barbel not quite half as long as the head. Caudal obliquely truncated. (*Cast.*)

Rio Ucayale (Peru).

Fam. 2. CHARACINIDÆ.

Characini, *Müll. Abhandl. Berl. Acad.* 1844, p. 184.

Body covered with scales, head naked; barbels none. Margin of the upper jaw formed by the intermaxillaries in the middle, and by the maxillaries laterally. Generally a small adipose fin behind the dorsal. Pyloric appendages more or less numerous; air-bladder transversely divided into two portions, and communicating with the organ of hearing by means of the auditory ossicles. Pseudobranchiæ none.

Inhabitants of the fresh waters of tropical Africa and America.

Synopsis of the Genera.

I. **Adipose fin none** (ERYTHRININA).

A. Ventral fins below the dorsal.

Palatine teeth unequal in size, those of the outer series being enlarged. 1. MACRODON, p. 281.

Palate with villiform teeth only; teeth in the jaws conical. 2. ERYTHRINUS, p. 283.

Jaws with a single series of tricuspid teeth …… 3. LEBIASINA, p. 285.

B. Ventrals in front of the dorsal.

Anal short …… 4. PYRRHULINA, p. 286.

Anal long …… 5. CORYNOPOMA, p. 287.

II. **Adipose fin present.**

A. Dentition imperfect.

a. *Dorsal fin short* (CURIMATINA).

Teeth none; belly rounded …… 6. CURIMATUS, p. 288.

Each lip with two series of minute, ciliiform, moveable teeth, the posterior series being angularly bent. Belly rounded …… 7. PROCHILODUS, p. 294.

Teeth rudimentary, moveable; the fourth branchial arch dilated, covered with a folded membrane …… 8. CÆNOTROPUS, p. 297.

A series of flat, serrated, moveable teeth in the upper jaw; none in the lower. 9. HEMIODUS, p. 298.

A series of flat, spoon-shaped teeth in the upper jaw; none in the lower. Lower lip three-lobed …… 10. SACCODON, p. 301.

Teeth moveable, few in number, denticulated; the lower jaw toothless in the middle, and with only a few on the side …… 11. PARODON, p. 301.

b. *Dorsal fin rather long* (Citharinina *).

Each lip with a single series of minute, ciliiform, moveable teeth.
12. Citharinus, p. 302.

B. Teeth in both jaws well developed.

a. *Dorsal fin short.*

aa. *Gill-opening rather narrow, the gill-membranes being grown to the isthmus; nasal openings remote from each other* (Anostomatina).

Teeth flat, serrated, without longitudinal keel in front.
13. Anostomus, p. 303.

Each tooth with one or two longitudinal keels in front, terminating in points.
14. Rhytiodus, p. 305.

Teeth flattened, subtruncated. not serrated ...... 15. Leporinus, p. 306.

bb. *Gill-openings wide, the gill-membranes not being grown to the isthmus; nasal openings close together.*

α. Teeth compressed, notched or denticulated (Tetragonopterina †).

αα. Anal fin short........................ 16. Piabucina, p. 311.

ββ. Anal fin more or less elongate.

* Belly rounded in front of the ventrals.

† Intermaxillary teeth in a double series; a pair of conical teeth behind the middle of the front series of teeth in the lower jaw.

Dorsal fin behind the ventrals........................ 17. Alestes, p. 312.

Dorsal fin above the ventrals .... 18. Brachyalestes, p. 314.

†† Intermaxillary teeth in a double series; no conical posterior mandibulary teeth.

Gill-rakers setiform; canine teeth none............ 19. Tetragonopterus, p. 317.

Gill-rakers short, lanceolate; lateral line continuous.
20. Scissor p. 331.

Teeth very unequal in size; lateral line interrupted.
21. Pseudochalceus, p. 331.

††† Intermaxillary teeth in a single series.
22. Chirodon, p. 332.

†††† Intermaxillary teeth in a triple series.

Scales large, unequal in size .... 23. Chalceus, p. 333.

Scales equal in size; a pair of conical teeth behind the middle of the front series of teeth in the lower jaw .... 24. Brycon, p. 333.

Intermaxillary teeth in three or four series ...... 25. Chalcinopsis, p. 336.

No conical posterior mandibulary teeth; anal long.
26. Bryconops, p. 338.

No conical posterior mandibulary teeth; anal of moderate length.
27. Creagrutus, p. 339.

** Belly compressed in front of the ventrals; canine teeth none.

Intermaxillary teeth in a double series; a pair of conical teeth behind the middle of the front series of teeth in the lower jaw ... 28. Chalcinus, p. 340.

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* *Coregonus niloticus*, Joannis, belongs perhaps to this group: see Appendix, p. 379.

† To this group appears to belong a genus noticed by Girard, *Astyanax*, which we shall mention in the Appendix at the end of this family (p. 380).

Ventral fins very small.................................. 29. Gastropelecus, p. 342.

Intermaxillary teeth in a single series; ventral fins well developed.
30. Piabuca, p. 343.

*** Belly compressed; canine teeth in the lower jaw.

A part of the teeth only are tricuspid............... 31. Agoniates, p. 344.

β. *All the teeth are conical* (Hydrocyonina).

* No teeth on the palate; anal fin long.

Dorsal fin behind the ventrals; scales small ...... 32. Anacyrtus, p. 345.

Dorsal fin above the ventrals .... 33. Hystricodon, p. 349.

Dorsal fin behind the ventrals; scales of moderate size.
34. Salminus, p. 349.

** No teeth on the palate; anal fin of moderate length.

Dorsal fin above the ventrals .... 35. Hydrocyon, p. 350.

*** A series of teeth on each side of the palate, which are implanted on a process of the intermaxillary, and not on the palatine bone. Anal fin short.

Dorsal fin behind the ventrals........................ 36. Sarcodaces, p. 352.

**** Each palatine bone with a series of conical teeth; anal fin long.

Dorsal fin in the middle of the length of the body; scales of moderate size.
37. Oligosarcus, p. 353.

Dorsal fin behind the middle of the length of the body; scales small.
38. Xiphorhamphus, p. 353.

***** Each palatine bone with a patch of minute granular teeth.

Anal short; belly rounded .... 39. Xiphostoma, p. 356.

Anal long; belly compressed .... 40. Cynodon, p. 358.

b. *Dorsal fin rather elongate.*

aa. *Gill-openings of moderate width, the gill-membranes being attached to the isthmus* (Distichodontina).

Belly rounded .... 41. Distichodus, p. 359.

bb. *Gill-openings wide, the gill-membranes not being attached to the isthmus.*

α. *Belly rounded; jaws with conical canine teeth* (Ichthyborina).

Lateral teeth of both jaws compressed, triangular. 42. Ichthyborus, p. 362.

β. *Belly rounded; canine teeth none* (Crenuchina).

Both jaws with a single series of tricuspid teeth... 43. Crenuchus, p. 365.

γ. *Belly with a spinous serrature* (Serrasalmonina).

Intermaxillary teeth three-lobed, in two series ... 44. Mylesinus, p. 366.

Intermaxillary teeth with lateral lobes, in a single series.
45. Serrasalmo, p. 366.

Intermaxillary teeth with a more or less oblique cutting edge, in two series.
46. Myletes, p. 372.

Intermaxillary teeth conical, in two series......... 47. Catoprion, p. 379.

(Appendix, p. 379.)

First Group. ERYTHRININA.

Characinidæ without adipose fin.

South America.

1. MACRODON*.

Macrodon, *Müll. & Trosch. Hor. Ichthyol.* iii. p. 6.

Dorsal fin placed nearly in the middle of the body; adipose fin none; anal rather short; ventrals below the dorsal. Body oblong, covered with large scales; head longish, with the cleft of the mouth wide. Cheeks covered with the enlarged infraorbital bones; supratemporal plate single. Both jaws armed with a single series of conical teeth, some being enlarged canine teeth. A band of villiform teeth on each side of the palate, each band with an outer series of larger conical teeth and with a detached anterior patch of small villiform teeth. Air-bladder without cellular portion.

Tropical America.

1. Macrodon trahira.

Tareira, *Marcgr.* p. 157.
Esox malabaricus, *Bloch*, tab. 392.
Synodus malabaricus, *Bl. Schn.* p. 397.
—— tareira, *Bl. Schn.* p. 398. pl. 79 (very bad).
Erythrinus macrodon, *Agass. in Spix, Pisc. Bras.* p. 43.
—— trahira, *Spix, l. c.* tab. 18.
—— brasiliensis, *Spix, l. c.* p. 45. tab. 20.
Macrodon trahira, *Müll. & Trosch. Hor. Ichth.* iii. p. 6. tab. 3. fig. 2.
—— tareira, *Cuv. & Val.* xix. p. 508.
? Macrodon ferox, *Gill, Ann. Lyc. Nat. Hist. New York*, vi. p. 411.

D. 14. A. 10–11. V. 8. L. lat. 38–39. Vert. 26/10.

Twelve longitudinal series of scales across the back, in front of the dorsal fin, from one lateral line to the other; nine across the back of the tail.

This species shows slight variations in the form of the body and of the head, chiefly dependent on age and sex, which may induce naturalists who have only a few specimens for examination to consider them as specific. It is also very remarkable that some specimens have large patches of asperities on the tongue, whilst others, which perfectly agree with the former in every detail, have the tongue smooth. Agassiz has counted from forty to forty-two scales in a longitudinal series; but probably he has taken one of the series above the true lateral line, which have more scales than the latter.

Guianas, Brazil.

a, b, c–d. Adult and half-grown. British Guiana.

* 1. Macrodon auritus, *C. & V.* xix. p. 519.—Montevideo.
2. —— patana, *C. & V.* xix. p. 522.—Cayenne.
3. —— guavina, *Valenc. in Humb. Observ. Zool.* ii. p. 179. tab. 48. fig. 1. (bad); *C. & V.* xix. p. 527; *Sir W. Jardine in Schomb. Fish. Brit. Guiana*, ii. p. 207. pl. 29 (cop. *Humb.*).—Lake of Tacarigua.
4. Erythrinus microcephalus, *Agass. in Spix, Pisc. Bras.* p. 44.—Rio S. Francisco.
5. Macrodon teres, *Cuv. & Val.* xix. p. 521.—Lake of Maracaïbo.

e. Adult: stuffed. Demerara. From the Collection of the Zoological Society.
f. Young: not good state. Demerara. Presented by Dr. Hancock.
g–h. Fine specimens. Essequibo River. Purchased of Mr. Ehrhardt.
i. Adult. River Capin, Para. Purchased of Mr. Stevens.
k. Young. River Cupai. Purchased of Mr. Stevens.
l, m, n, o, p–q. Fine specimens. Bahia. From Dr. Wucherer's Collection.
r, s. Adult. Brazil.
t, u, v, w–x. Adult and half-grown. South America.
y. Adult female: skeleton. Bahia. From Dr. Wucherer's Collection.

2. Macrodon intermedius.

D. 12–14. A. 11. V. 8. L. lat. 43.

Thirteen longitudinal series of scales across the back, in front of the dorsal fin, from one lateral line to the other; nine across the middle of the back of the tail.

The height of the body is contained about five times in the total length (without caudal), the length of the head thrice and three-fourths. Bones of the head striated. Vertical fins immaculate in the larger specimen, with brown and yellow spots in the smaller one; body finely marbled with brown, each scale having a darker base.

Cipo River.

a. Stuffed, 21 inches long. Presented by Ch. Cumberland, Esq.—Vernac. name: Trahira.
b Skin, 11 inches long. Presented by Ch. Cumberland, Esq.

3. Macrodon microlepis.

D. 14. A. 11. V. 8. L. lat. 43.

Thirteen or fourteen longitudinal series of scales across the back, in front of the dorsal fin, from one lateral line to the other; eleven across the back of the tail.

The height of the body is contained thrice and three-fourths in the total length (without caudal) in adult females, and four times and three-fourths in adult males, the length of the head thrice and two-fifths. Bones of the head striated. Vertical fins with numerous small round black spots; body marbled with brown; old specimens with a broad, more or less distinct black band along the lateral line and the joining halves of the series of scales nearest to it. Belly immaculate, yellowish.

Western Ecuador; Guatemala.

a, b–d. Adult (15 inches long) and young. Western Ecuador. From Mr. Fraser's Collection.
e–f, g. Adult and half-grown. Chagres River. From the Collection of Messrs. Dow and Salvin.

4. **Macrodon aimara.**

? Erythrinus macrodon, *in Schomb. Fish. Brit. Guiana*, i. p. 254. pl. 27 (very bad).
Macrodon aimara, *Cuv. & Val.* xix. p. 523. pl. 586.

D. 15. A. 11. V. 9.

Canine teeth very large. (*Val.*)
Cayenne.

2. ERYTHRINUS*.

Erythrinus, *Gronov. Mus. Ichthyol.* p. 6; *Müll. & Trosch. Hor. Ichthyol.* iii. p. 5.

Dorsal fin placed nearly in the middle of the length of the body; adipose fin none; anal rather short; ventrals below the dorsal. Body oblong, covered with large scales; head longish, with the cleft of the mouth wide. Cheeks covered with the enlarged infraorbital bones; supratemporal plate double. Both jaws armed with a single series of conical teeth, some being enlarged. A band of villiform teeth on the palatine, and sometimes on the pterygoid bones; no detached anterior group of teeth; vomer toothless. Anterior part of the hinder air-bladder cellular.

Tropical America.

I have frequently observed the absence of one or two fins in species of this genus; sometimes the anal, sometimes one of the ventrals, sometimes a part of the dorsal fin is wanting; such fishes are evidently monstrosities, and had not lost those fins by accident.

The species may be divided thus:—

* Pteryगoid teeth present: *Erythrinus*.
** Pterygoid teeth absent: *Hetererythrinus*.

* Pterygoid teeth present.

1. **Erythrinus unitæniatus.**

Erythrinus unitæniatus, *Spix, Pisc. Bras.* p. 42. tab. 19; *Müll. & Trosch. Hor. Ichthyol.* iii. tab. 3. fig. 1 (teeth); *Cuv. & Val.* xix. p. 486.
—— vittatus, *Cuv. & Val.* xix. p. 499. pl. 585 (not good).

D. 11. A. 11. V. 8. L. lat. 33. Vert. 23/12.

The band of palatine teeth is nearly as broad as the maxillary bone; pterygoid teeth present, forming a band which is shorter than, but as broad as, that of the palatine bones. The length of the head is more than one-fourth of the total (without caudal); caudal fin nearly as long as the head without snout. The depth of the free portion of the tail is one-half of the length of the head. Posterior dorsal rays not prolonged; the ventral does not extend beyond, if at all to, the vent. A black ocellus edged in front with silvery, on the extremity of the operculum; a brown band, running along the lateral line, is as frequently absent as present. Caudal fin uniform dark-coloured, without any spots.

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* 1. Maturaque, *Marcgr.* p. 169; Synodus palustris, *Bl. Schn.* p. 398.—Brazil.
2. Erythrinus cinereus, *Gill, Ann. Lyc. Nat. Hist. New York*, 1858, vi. p. 413.—Trinidad.

Guianas, Brazil.

a. Adult. British Guiana.
b. Thirteen inches long: stuffed. Demerara. From the Collection of the Zoological Society.
c. Adult. Surinam. Purchased of Mr. Frank as *Erythrinus balteatus.*
d. Young. Essequibo. Purchased of Mr. Ehrhardt.
e. Adult. River Capin, Para. Purchased of Mr. Stevens.
f. Adult. River Cupai. Purchased of Mr. Stevens.
g–h, i–m. Adult and half-grown. Bahia. From Dr. O. Wucherer's Collection.
n. Adult. Purchased of Mr. Stevens.

2. **Erythrinus gronovii.**

? Erythrinus salvus, *Agass. in Spix, Pisc. Bras.* p. 41.
Erythrinus gronovii, *Cuv. & Val.* xix. p. 500 (not synon.).

D. 11. A. 11.

Very similar to *E. unitæniatus*, but with the caudal fin spotted. Four or five irregular vertical streaks on the hind part of the body. (*Val.*)

Guianas; ? Brazil.

** Pterygoid teeth absent.

3. **Erythrinus salmoneus.**

Erythrinus, sp., *Gronov. Mus. Ichthyol.* ii. p. 6. no. 154. pl. 7. fig. 6.
Synodus erythrinus, *Bl. Schn.* p. 397.
Erythrinus salmoneus, *Gronov. Syst. ed. Gray*, p. 170.

D. 10. A. 11. V. 8 L. lat. 33.

The band of palatine teeth is extremely narrow; pterygoid teeth none. The height of the body is contained four times and two-thirds or four times and three-fourths in the total length (without caudal), the length of the head four times or thrice and three-fourths. The length of the naked portion of the caudal fin equals the depth of the free part of the tail, or the distance between orbit and extremity of the operculum. The eighth dorsal ray is as high as the tail; the longest anal ray two-fifths or half as long as the head. The pectoral fin extends beyond the middle of the distance of its base from that of the ventral, the ventral nearly to the vent. Upper and lateral parts chestnut-brown; belly and gill-membranes bluish; a black spot on the operculum, edged with silvery above. Dorsal and anal rays with small round black spots; caudal nearly uniform brownish violet, only traces of spots are visible towards the extremity of the caudal rays; pectoral and ventral blackish.

Amazons; Surinam.

a. Skin: type of the species. Surinam. From Gronow's Collection.
b–c. Seven inches long. River Cupai. Purchased of Mr. Stevens.

4. Erythrinus longipinnis.

D. 11. A. 13. V. 8. L. lat. 34.

The band of palatine teeth is half as broad as the widest part of the maxillary; pterygoid teeth none. The height of the body is two-ninths of the total length (without caudal), the length of the head one-fourth. The length of the naked part of the caudal fin is a little more than the depth of the free portion of the tail, which is three-fifths of the length of the head. The dorsal rays rapidly increase in length towards behind, the hinder part of the fin being produced and somewhat longer than the head; anal fin rather low; the pectoral extends beyond the middle of the distance of its base from that of the ventral; ventral much longer than pectoral, reaching far beyond the origin of the anal. Upper parts and all the fins blackish, the lower yellowish. Crown of the head with black dots; dorsal and caudal with small dark spots more or less confluent into stripes; operculum with a blotch, the upper part of which is pearl-coloured, the lower black.

Essequibo River.

a. Fine male specimen, 6½ inches long. From Mr. Ehrhardt's Collection.

5. Erythrinus brevicauda.

D. 11. A. 11–12. V. 8. L. lat. 33.

The band of palatine teeth is very narrow; pterygoid teeth none. The height of the body equals the length of the head, which is a little less than one-fourth of the total (without caudal). The naked portion of the caudal fin is very short, its length being considerably less than the depth of the free portion of the tail, which is two-thirds of the length of the head. The dorsal rays increase in length to the eighth, which is as high as the tail; anal fin low; pectoral short, not extending backwards to the middle of the distance of its base from that of the ventral. Ventral fin extending to, or nearly to, the vent. A pearl-coloured crescent with a black spot in its posterior concavity, on the operculum; another black and silvery spot on the commencement of the lateral line. Two series of brown dots along the lower side of the tail, each dot occupying the base of a scale. Vertical fins with small light spots.

Hab. ——?

a–b. Six inches long. Presented by the Royal College of Surgeons.

3. LEBIASINA.

Lebiasina, *Cuv. & Val.* xix. p. 531.

Dorsal fin placed nearly in the middle of the length of the body; adipose fin none; anal rather short; ventrals below the dorsal. Body oblong, covered with large scales; lateral line none. Head of moderate size, cleft of the mouth of moderate width. Cheeks covered with the enlarged infraorbital bones. The intermaxillary and mandibulary are armed with a single series of small, flat, tricuspid teeth; maxillary teeth none; a few minute teeth are implanted on the edge of the palatine bone*. The anterior part of the hinder air-bladder is cellular.

Peru, Ecuador.

1. **Lebiasina bimaculata.**

Cuv. & Val. l. c. pl. 587.

D. 10. A. 11. V. 8. L. lat. 25. L. transv. 8. Vert. 21/16.

The height of the body is one-fourth, or rather more than one-fourth, of the total length (without caudal), and more than the length of the head. A round black spot on the root of the caudal fin; a blackish streak across the basal portion of the anterior dorsal rays.

Peru, Ecuador.

a. Fine specimen. Bay of Callao. Presented by Professor Nation.
b. Several specimens. Western Andes of Ecuador. From Mr. Fraser's Collection.
c. Skeleton. From Mr. Fraser's Collection.

4. PYRRHULINA.

Pyrrhulina, *Cuv. & Val.* xix. p. 535.

Dorsal fin placed behind the middle of the length of the body; adipose fin none; anal rather short; ventrals in front of the dorsal. Body longish, covered with large scales; head longish, with the cleft of the mouth wide. Cheeks covered with the enlarged infraorbital bones. The intermaxillary is armed with small teeth; maxillary toothless, received in a groove of the mandible; mandibles with several series of small teeth; palate toothless. Air-bladder without cellular portion. Gill-openings wide, the gill-membranes being scarcely united below the throat.

Surinam.

1. **Pyrrhulina filamentosa.**

Cuv. & Val. l. c. pl. 589.

D. 9. A. 10. V. 8. L. lat. 26. L. transv. 7.

Rays of the dorsal and caudal fins are produced into filaments. A black band runs from the end of the operculum through the eye round the snout, the margin of the mandible being black. Dorsal fin with a very large black blotch.

Guianas.

a–b. Adult. Essequibo. Purchased of Mr. Ehrhardt.

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* Valenciennes describes this bone as toothless.

5. CORYNOPOMA.

Stevardia, Corynopoma, et Nematopoma, *Gill, Ann. Lyc. Nat. Hist. New York*, 1858, p. 422.

Dorsal fin placed behind the middle of the length of the body, above the anal; adipose fin none; ventrals small. Body subfusiform, compressed, covered with scales of moderate size; cleft of the mouth wide, with the lower jaw projecting beyond the upper. Cheeks covered with the enlarged infraorbital bones; operculum more or less extended, armed with a spine or terminating in a process. Teeth compressed, with multicuspid crowns, the median cusps being the largest, in two series in the intermaxillaries, and in a single one in the mandible; palate toothless. Air-bladder?; gill-openings?

Trinidad.

1. Corynopoma albipinne.

Stevardia albipinnis, *Gill, l. c.* p. 425.

D. 10. A. 20. V. 6. P. 10. L. lat. 40.

Operculum with a triangular spiniform dilatation behind. The dorsal fin commences above the seventh or eighth ray of the anal, and is about a third higher than long. Yellowish green, with a black line along the side of the tail; fins white. (*Gill.*)

Trinidad.

2. Corynopoma riisei.

Gill, l. c. p. 426.

D. 8. A. 27. V. 6. P. 10.

Operculum with a posterior triangular dilatation, from the extremity of which issues a claviform process, which is most slender at the posterior third of its length and slightly deflected in the direction of the vent; it advances but little beyond the base of the pectoral. Dorsal fin more than twice as high as long; the last two or three anal rays longer than those which immediately precede them. Coloration similar to that of the preceding species. (*Gill.*)

Trinidad.

3. Corynopoma veedonii.

Gill, l. c. p. 427.

D. 9. A. 31. V. 6. P. 10.

Operculum with a posterior triangular dilatation, from the extremity of which issues a claviform process which descends at the base only, and very soon advances upwards with a curve, and is continued in a nearly straight line, and in a direction towards the anterior portion of the dorsal; it terminates above the base of the ventrals. Dorsal fin more than twice as high as long; the last three or four anal rays longer than those which immediately precede them. Coloration as in the preceding species. (*Gill.*)

Trinidad.

4. Corynopoma searlesii.

Nematopoma searlesii, *Gill, l. c.* p. 429.

D. 10. A. 26. V. 6. P. 10.

Operculum with a triangular spiniform dilatation which is produced into a very long slender setaceous filament with a compressed expansion at the extremity, extending to behind the dorsal. The dorsal fin commences above the fifth or sixth anal ray, and when bent back, extends beyond the root of the caudal; it is five times as high as long; anal fin increasing in height posteriorly. The pectorals extend as far backwards as the ventrals, beyond the origin of the anal. Coloration as in the preceding species. (*Gill.*)

Trinidad.

Second Group. CURIMATINA.

Characinidæ with an imperfect dentition and with a short dorsal fin.

South America.

6. CURIMATUS.

Curimatus, sp., *Cuv. Règne Anim.*
Anodus, *Spix, Pisc. Bras.* p. 60; *Müll. & Trosch. Hor. Ichth.* iii. p. 6.

Dorsal fin placed nearly in the middle of the body; adipose fin present; anal rather short or of moderate length · ventrals below the dorsal. Body oblong or elevated, with the belly rounded or flattened before the ventrals. Cleft of the mouth transverse, lips none, margins of the jaws trenchant. No teeth whatever. Intestinal tract very long and narrow.

South America.

The species may be subdivided thus:—

* Scales of moderate size; L. lat. less than 70: *Curimatus*, p. 288.
** Scales small; L. lat. more than 80: *Anodus*, p. 293.

* Scales of moderate size; L. lat. less than 70.

1. Curimatus spilurus.

D. 12. A. 9 (without first rudimentary ray). V. 9. L. lat. 33. L. transv. 6/6.

The length of the head is contained thrice and two-thirds or four times in the total (without caudal). The upper profile is a little concave above the occiput. Snout scarcely shorter than the eye, the diameter of which is somewhat less than the width of the interorbital space; eye with a narrow anterior and posterior lid. Caudal lobes longer than the head. The origin of the dorsal fin is considerably nearer to the extremity of the snout than to the base of the caudal. The pectoral terminates at some distance from the ventral, its length being three-fourths of that of the head. The ventral extends to, or nearly to, the vent. Silvery, with a yellowish band along the lateral line, terminating in a round deep-black spot at the base of the caudal.

The two specimens on which I have founded this species differ most remarkably in the form of the body, although they agree in every other point, so that there can be no doubt that they are of one species. One has the body elevated like a *C. cyprinoides*, its depth being two-fifths of the total length (without caudal); the other has the body oblong, its depth being contained thrice and a third in the total. Both are of the same length.

Essequibo.

a–b. Three and a half inches long. From Mr. Ehrhardt's Collection.

2. Curimatus alburnus.

Anodus alburnus, *Müll. & Trosch. Hor. Ichth.* iii. p. 26. tab. 4. fig. 3.
Curimatus alburnus, *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 144.

D. 12. A. 10. V. 10. L. lat. 36. L. transv. 11.

The height of the body is contained twice and three-fourths in the total length (without caudal), the length of the head thrice and a half. Orbit with an anterior and posterior eyelid. The belly is rounded in front of the ventrals, and scarcely keeled behind them. Caudal fin scaly. The pectoral fins do not extend to the ventrals, which reach to the vent. Immaculate, silvery.

Lake Amucu (British Guiana); Rio Guaporé.

3. Curimatus argenteus.

Gill, Ann. Lyc. Nat. Hist. New York, 1858, p. 422.

D. 10. A. 8. V. 9. L. lat. 37. L. transv. 13.

The height of the body is contained thrice and one-third in the total length (with the caudal), the length of the head four times and two-thirds. Snout longer than the diameter of the eye, which is contained once and one-third in the width of the interorbital space. The commencement of the dorsal fin is less than a third of the length of the body nearer to the snout than to the end of the caudal. Silvery: a black spot at the root of the caudal fin; a number of black dots cover the inferior third of the membrane between the middle rays of the dorsal, and give the appearance of a rounded spot. (*Gill.*)

Trinidad.

4. Curimatus gilberti.

Quoy & Gaim. Voy. Uran. Zool. p. 219. pl. 48. fig. 1; *Cuv. & Val.* xxii. p. 16.

D. 11. A. 9. V. 9. L. lat. 41.

The height of the body is more than one-third of the total length (without caudal); the upper profile is a little concave above the occiput. A bluish band along the middle of the side of the tail, terminating in a blackish spot at the root of the caudal fin.

Rio Macacu (Brazil).

5. **Curimatus troschelii.**

Anodus troschelii, *Günth. Proc. Zool. Soc.* 1859, p. 418.

D. 12. A. 10 (with first rudimentary ray). V. 9. L. lat. 46. L. transv. 7/8.

The height of the body is contained thrice and a fourth in the total length (without caudal), the length of the head thrice and two-thirds. The upper profile is a little concave above the occiput. Snout not shorter than the eye, the diameter of which is contained once and two-thirds in the width of the interorbital space. Orbit without adipose eyelids. Caudal lobes scarcely longer than the head. The origin of the dorsal fin is a little nearer to the extremity of the snout than to the root of the caudal, and corresponds to the fourteenth scale of the lateral line; its height is much less than the length of the head. The pectoral terminates at some distance from the ventral, its length being two-thirds of that of the head. The ventral does not extend to the vent, and its base is below the middle of the dorsal. Belly not keeled behind the ventrals. Silvery, vertical fins more or less blackish; a round black spot on the end of the lateral line.

Western Andes of Ecuador.

a. Several specimens. From Mr. Fraser's Collection.

6. **Curimatus rutiloides.**

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 141. taf. 1. fig. 2.

D. 10–11. A. 10. L. lat. 50–53. L. transv. $\frac{11-12}{8}$.

The height of the body is one-third or somewhat less than one-third of the total length (without caudal), the length of the head two-sevenths. The upper profile is not concave. Eye with an anterior and posterior lid. The pectoral does not quite extend to the base of the ventral, nor does the ventral reach to the vent—the ventral being rather shorter than the pectoral. Coloration uniform. (*Kner.*)

Matogrosso, Barra do Rio Negro.

7. **Curimatus cyprinoides.**

Salmo cyprinoides, *L. Syst. Nat.* i. p. 514.
—— edentulus, *Bl.* taf. 380; *Bl. Schn.* p. 472.
Characinus cyprinoides, *Lacép.* v. pp. 272, 274.
Curimatus cyprinoides, *Cuv. & Val.* xxii. p. 7 *.

Note.—Charax no. 378, *Gronov. Zoophyl.* i. p. 123, is generally quoted as a synonym of this species, but Gronow speaks of "squamæ minutissimæ," and therefore I consider it as identical with *Curimatus*

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* Valenciennes states in the formula of the fins A. 11, which is evidently an error; he has confounded it with the formula given for *C. ciliatus*, where he puts A. 9 instead of A. 11.

abramoides, Kner. Also, the authors of the 'Horæ Ichthyologicæ' appear to have examined a distinct species, if their specimens really had thirteen anal rays.

D. 11. A. 10*. V. 10–11. L. lat. 56. L. transv. 15/9.

The height of the body is two-fifths of the total length (without caudal), the length of the head two-sevenths. The upper profile is slightly concave above the occiput. Eye with a broad anterior and posterior adipose lid. The pectoral does not extend to the base of the ventral, and the ventral terminates at a considerable distance from the vent. Caudal fin forked; the second and third dorsal rays sometimes prolonged into a long filament. Uniform silvery.

Guianas, Northern Brazil.

a–b. Fine specimens. River Capin (Para). Purchased of Mr. Stevens.

8. **Curimatus essequibensis.**

Anodus cyprinoides, *Müll. & Trosch. Hor. Ichth.* iii. p. 7 (*non auct.*).

D. 11. A. 12–13 (the first rudimentary ray included). V. 10. L. lat. 51. L. transv. 12/9.

Very similar to *C. cyprinoides*.

The height of the body is contained twice and two-fifths in the total length (without caudal), the length of the head thrice and one-third. The upper profile is slightly concave above the occiput. Snout shorter than the eye, broad; the diameter of the eye is two-thirds of the width of the interorbital space. Eye with a broad anterior and posterior adipose lid. Caudal fin forked, the lobes being a little longer than the head. The origin of the dorsal fin is nearer to the extremity of the snout than to the base of the caudal. The pectoral terminates at some distance from the ventral, its length being contained once and three-fourths in that of the head; the ventral does not extend to the vent. Abdomen angular before the ventral. Uniform silvery, back bluish.

Essequibo.

a–b. Five and a half inches long. From Mr. Ehrhardt's Collection. These specimens have the anterior dorsal rays not prolonged.

9. **Curimatus schomburgkii.**

D. 12. A. 11–12. L. lat. 55. L. transv. 13/8.

Similar to *C. cyprinoides*.

The height of the body is contained twice and a half in the total length (without caudal), the length of the head thrice and one-third. The upper profile is distinctly concave above the occiput. Snout shorter than the eye; eye with a broad anterior and posterior lid. Intermaxillary broad, the cleft of the mouth being quite at the lower side of the snout. Caudal fin forked, the lobes being as long as the head. The origin of the dorsal fin is a little nearer to the extremity of the snout than to the base of the caudal. The pectoral extends to, or nearly to, the ventral, its length being two-thirds of that of the head. The ventral does not extend to the vent. Abdomen angular before the ventral. Uniform silvery, back bluish.

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* In this number the first rudimentary ray is included; and the last, which is split to the base, is reckoned as one.

British Guiana.

a. Six inches long. British Guiana. Presented by Sir R. Schomburgk.—The anterior dorsal rays are a little prolonged.
b. Young. British Guiana. Purchased of Mr. Leadbeater.
c. Eleven inches long: skin. Demerara. From the Collection of the Zoological Society.
d. Half-grown. British Guiana. Purchased of Mr. Scrivener.
e. Young.

10. **Curimatus ciliatus.**

Anodus ciliatus, *Müll. & Trosch. Hor. Ichth.* iii. p. 25. tab. 4. fig. 4.
Curimatus ciliatus, *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 143.

D. 12. A. 11. V. 10. L. lat. 57. L. transv. 25.

The height of the body is contained twice and one-sixth in the total length (without caudal), the length of the head thrice and a half. Orbit with an anterior and posterior adipose eyelid; its diameter is one-half of the width of the interorbital space. The upper profile of the head and nape is convex, without concavity. Belly rounded before the ventrals, keeled behind them. The pectorals terminate at some distance from the ventrals, and the latter at some distance from the vent. Coloration uniform. (*M. & T.*)

Described from specimens 6½ inches long; Essequibo River.

11. **Curimatus vittatus.**

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 139. taf. 1. fig. 1.

D. 11. A. 10*. L. lat. 56–64. L. transv. $\frac{13-16}{7-9}$.

The height of the body is one-third of the total length (without caudal), the length of the head two-sevenths or a little less. The upper profile is scarcely concave above the occiput. Eye with a broad anterior and posterior lid. The pectoral does not extend to the base of the ventral; the ventral is longer than the pectoral, reaching nearly to the vent. Back with dark cross-bands; a dark band along the lateral line, bordered by a light one above and below. (*Kner.*)

Rio Guaporé and Rio Negro.

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* In this and in other species described by Kner, the first rudimentary ray does not appear to have been counted.

** Scales small; L. lat. more than 80.

12. Curimatus planirostris.

Charax, no. 378, *Gronov. Zoophyl.* i. p. 123.
Charax planirostris, *Gronov. Syst. ed. Gray*, p. 154.
Curimatus abramoides, *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 142. taf. 2. fig. 3.

D. 11. A. 10. V. 8–9. L. lat. 85–90. L. transv. $\frac{24-20}{24-26}$.

The height of the body is one-half of the total length (without caudal); the upper profile is straight above the occiput. Eye with a broad anterior and posterior lid. The medial line of the back is scaleless before the dorsal fin, and trenchant behind. Anterior dorsal rays produced. Ventral longer than pectoral, terminating at a considerable distance from the vent. Coloration uniform.

Barra do Rio Negro.

13 Curimatus latior.

Anodus latior, *Spix, Pisc. Bras.* p. 62. tab. 41.
Curimatus latior, *Cuv. & Val.* xxii. p. 19.

D. 12. A. 14–15. V. 9. L. lat. 100–110.

The height of the body is contained thrice or thrice and a third in the total length (without caudal), but females generally have the body still more elevated. Belly much compressed and sharply keeled. Coloration uniform.

River Amazons.

14. Curimatus laticeps.

Cuv. & Val. xxii. p. 21. pl. 634.

D. 11. A. 17. L. lat. 95.

The height of the body is rather more than one-third of the total length (without caudal); the upper profile is a little concave above the occiput. Crown of the head and snout broad. Ventral longer than pectoral. Coloration uniform. (*Val.*)

Lake of Maracaïbo.

I cannot agree with Kner in identifying this species with *C. latior* of Spix, the latter having two anal rays less (Denkschr. Wien. Acad. 1859, xvii. p. 145).

15. Curimatus elongatus.

Anodus elongatus, *Spix, Pisc. Bras.* p. 61. tab. 40.
Curimatus elongatus, *Cuv. & Val.* xxii. p. 20.

D. 12. A. 12. V. 11. L. lat. 110.

Body elongate, its depth being less than the length of the head, which is contained thrice and two-thirds in the total (without caudal). Coloration uniform.

Brazils.

7. PROCHILODUS.

Prochilodus, *Agass. in Spix, Pisc. Bras.* p. 62.
Pacu, *Spix, ibid.*

Dorsal fin placed nearly in the middle of the length of the body; anal rather short; ventrals below the dorsal. Body more or less oblong, covered with scales of moderate size; belly rounded in front of the ventrals. Cleft of the mouth transverse, with thick lips; each lip with a series of minute ciliiform moveable teeth; there is in the middle of the jaw behind each front series another short one, angularly bent, the angle pointing backwards. Intestinal tract very long, with many circumvolutions.

Mud-eating fishes from South America.

1. Prochilodus humeralis.

Günth. Proc. Zool. Soc. 1859, p. 419.

D. 12. A. 11. V. 10. L. lat. 33. L. transv. 5/7.

The height of the body is nearly one-third of the total length (without caudal), the length of the head nearly one-fourth. The end of the dorsal fin is above the end of the base of the ventral. Back greenish, sides and belly yellowish, each scale with a silvery margin. A black spot behind the shoulder, on the fourth, fifth, and sixth scales of the lateral line. No spot on the root of the tail. Dorsal with blackish dots posteriorly, the other fins immaculate.

Western Andes of Ecuador.

a c. Types of the species. From Mr. Fraser's Collection.

2. Prochilodus vimboides.

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 148. taf. 2. fig. 4.

D. 11. A. 10. V. 9. L. lat. 35–36. L. transv. 5/5.

The height of the body is contained thrice and one-third in the total length (without caudal), the length of the head four times and two-thirds. The end of the dorsal fin is behind the end of the base of the ventral. Coloration uniform; each dorsal ray with two series of minute dots. (*Kner.*)

Brazil?

3. Prochilodus argenteus.

Curimata, *Marcgr. Brasil.* p. 156.
Prochilodus argenteus, *Agass. in Spix, Pisc. Bras.* p. 63. pl. 38 (bad); *Cuv. & Val.* xxii. p. 71.
? Prochilodus costatus, *Cuv. & Val.* xxii. p. 79.

D. 12. A. 10. V. 9. L. lat. 45. L. transv. $\frac{9\text{–}10}{9\text{–}10}$.

The height of the body is two-fifths or one-third of the total length (without caudal), the length of the head is contained in it four times and two-thirds. Silvery, each scale with a narrow blackish base; the hind part of the dorsal fin with blackish dots; caudal fin uniform.

Brazil

a–b. Skins (20 inches long). Cipo River. Presented by Ch. Cumberland, Esq.

4. Prochilodus nigricans.

? Prochilodus nigricans, *Agass. in Spix, Pisc. Bras.* p. 64. taf. 39.
Prochilodus rubro-tæniatus, *Schomb. Fish. Guian.* i. p. 258. pl. 28.
Pacu nigricans, *Müll. & Trosch. Hor. Ichth.* iii. taf. 1. figs. 4 & 4 *a.*
Prochilodus nigricans, *Cuv. & Val.* xxii. p. 80; *Casteln. Anim. Amér. Sud, Poiss.* p. 63. pl. 31. fig. 3 (bad).

D. 11. A. 10. V. 9. L. lat. 43. L. transv. $\frac{8}{7-8}$.

The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head four times. Silvery, each scale darker at the base: dorsal and caudal fins with blackish dots, which are arranged in irregular transverse series.

Brazil; Guiana.

a. Fine specimen. Essequibo River. From Mr. Ehrhardt's Collection.

5. Prochilodus oligolepis.

Prochilodus nigricans, *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 146 (not synon.).

L. lat. 36–38; otherwise similar to *P. nigricans.*

Brazil

The smaller number of scales in the lateral line shows that the specimens named *P. nigricans* in the Vienna Collection belong to a different species.

6. Prochilodus reticulatus.

Cuv. & Val. xxii. p. 92; *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 147.

D. 11. A. 11. V. 9. L. lat. 44.

The height of the body is contained four times and one-fourth in the total length (with the caudal), the length of the head five times and one-third. The margin of each scale rough, as if covered with small scales. The pectorals terminate at a considerable distance from the ventrals. Each scale with a darker margin; dorsal fin with dots.

Brazil. Lake of Maracaïbo.

7. Prochilodus lineatus.

Paca lineatus, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 8. fig. 3.
Prochilodus lineatus, *Cuv. & Val.* xxii. p. 84.

D. 12. A. 11. L. lat. 50.

The height of the body is less than one-third of the total length (without caudal); the pectoral terminates at a considerable distance from the base of the ventrals. Silvery, with greenish stripes along the series of scales; fins immaculate. (*Val.*)

Rio de la Plata, Rio Parana, Uruguay.

8. **Prochilodus dobulinus.**

Cuv. & Val. xxii. p. 81.

B. 4. D. 11. A. 12. V. 9. L. lat. 50.

Head very broad; body regularly ovate. Coloration uniform. (*Val.*)

Amazons.

9. **Prochilodus brama.**

Cuv. & Val. xxii. p. 82; *Casteln. Anim. Amér. Sud, Poiss.* p. 62. pl. 31. fig. 2.

D. 11. A. 12. V. 9. L. lat. 60.

The height of the body is contained twice and two-thirds in the total length (with the caudal); head two-thirds as broad as long. Coloration uniform. (*Val.*)

10. **Prochilodus insignis.**

? Prochilodus insignis, *Schomb. Fish. Guiana*, i. p. 261. pl. 30.
Prochilodus insignis, *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 147.

D. 10. A. 10. L. lat. 46. L. transv. $\frac{9-10}{10-11}$.

The height of the body is contained twice and a half in the total length (without caudal), the length of the head thrice and one-third. The origin of the ventral fin is below the middle of the dorsal. The anterior dorsal rays produced; the ventral does not extend on to the vent. Dark lines along the joining edges of the series of scales; caudal fin with a black medial band and with three or four oblique black bands across each lobe; anal with three similar bands.

Amazons; ? Rio Branco.

a–h. Santarem. From Mr. Bates's Collection.

11. **Prochilodus binotatus.**

Schomburgk, Fish. Guiana, i. p. 260. pl. 29; *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 148.

D. 11. A. 10. L. lat. 48–50. L. transv. 10/10.

The height of the body is one-third of the total length (without caudal). A medial black band on the caudal fin, and three or four oblique ones on each of the lobes; two others on the anal fin. Sometimes a black spot on the origin of the lateral line, and another on its termination.

Rio Branco, Rio Negro.

12. Prochilodus tæniurus.

Curimatus tæniurus, *Valenc. in Humb. Observ. Zool.* ii. p. 166.
Prochilodus tæniurus, *Cuv. & Val.* xxii. p. 86.

L. lat. 76. Caudal fin with a black medial streak, and with three oblique black bands on each lobe. (*Val.*)

Brazil?

8. CÆNOTROPUS.

Chilodus, *Müll. & Trosch. Hor. Ichth.* i. p. 10.
Chilodus et Microdus*, *Kner, Denkschr. Acad. Wien,* 1859, xvii. pp. 149, 151.

Dorsal fin placed nearly in the middle of the length of the body, above the ventrals; anal short. Body oblong, covered with large scales; belly not compressed. Cleft of the mouth small; teeth rudimentary, moveable, in a single series, in one species in both lips, in the other in the upper only; palate toothless. Nostrils close together, separated by a small lobe covering the posterior. Gill-openings rather narrow, the gill-membranes being grown to the isthmus, without free posterior edge. The suboperculum angular behind. The fourth branchial arch dilated, convex behind and concave in front, the convex side covered with a mucous membrane, which is transversely folded.

Guiana, Brazil.

1. Cænotropus labyrinthicus.

Chilodus labyrinthicus, *Kner, Denkschr. Acad. Wiss. Wien,* **1859**, xvii. p. 149. taf. 3. fig. 5.

D. 12. A. 9. V. 10. L. lat. 28. L. transv. 4/4.

Teeth in the upper lip only. The length of the head is one-fourth of the total (without caudal). A broad silvery band along the middle of the side; a brownish spot above the pectoral; each scale above the silvery band with a small brown spot at the base.

Amazons.

a. River Capin. Purchased of Mr. Stevens.

2. Cænotropus punctatus.

Chilodus punctatus, *Müll. & Trosch. Hor. Ichth.* i. p. 26. taf. 4. fig. 2; *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 151.
Citharinus chilodus, *Cuv. & Val.* xxii. p. 103.

D. 11. A. 12–13. V. 9–10. L. lat. 25.

Teeth in the lower lip as well as in the upper. The length of the head is a little more than one-fourth of the total (without caudal). Each scale with a small brown spot at the base. A blackish band along the side below the lateral line. Dorsal fin with small black spots, and with a larger one anteriorly near to its top.

Lake Amucu (Guiana).

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* Both these names are preoccupied.

9. HEMIODUS*.

Hemiodus, *Müll. & Trosch. Hor. Ichthyol.* iii. p. 9.

Dorsal fin placed nearly in the middle of the length of the body; anal short; ventrals below the dorsal. Body rather elongate, covered with scales of moderate or small size; belly rounded in front of the ventrals. Cleft of the mouth small, with the upper lip slightly thickened; a series of flat, short, serrated, moveable teeth in the upper lip; lower jaw with rather sharp margin, without teeth; palate toothless.

South America, east of the Andes.

1. Hemiodus notatus.

Anodus (?) notatus, *Schomb. Fish. Guiana*, i. p. 218. pl. 15 (bad).
Hemiodus notatus, *Cuv. & Val.* xxii. p. 119 (pl. 638 †); *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 158.

B. 4–5. D. 11. A. 11. V. 11. L. lat. 57–63. L. transv. 12/6.

The scales below the lateral line are much larger than those above. The height of the body is contained thrice and three-fourths in the total length (without caudal), the length of the head four times. The distance between the gill-opening and the vertical from the origin of the dorsal is less than the length of the head. Silvery, a round black spot above the lateral line, behind the dorsal fin, corresponding to the thirty-third scale of the lateral line. Each caudal lobe with a black longitudinal band.

Guianas.

a–b. Fine specimens. Essequibo. From Mr. Ehrhardt's Collection.
c. Adult. Surinam.

2. Hemiodus microcephalus.

D. 11. A. 10–11. V. 11. L. lat. 67–72. L. transv. 12/6.

Very similar to *H. notatus*.

The scales below the lateral line are much larger than those above. The height of the body is contained four times in the total length (without caudal), the length of the head four times and two-thirds or five times. The distance between the gill-opening and the vertical from the origin of the dorsal is equal to, or more than, the length of the head. The upper jaw with thirty-two crenulated teeth. Eye with very broad adipose lids. The root of the ventral corresponds to the hinder half of the dorsal fin; anal fin very small, the length of its longest ray being two-fifths of that of the head. Coloration as in *H. notatus*; but the lateral spot is of an ovate form, and its middle corresponds to the thirty-eighth scale of the lateral line.

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* 1. Curimatus amazonum, *Humb. Observ. Zool.* ii. p. 165. pl. 45. fig. 2 (bad).—Prochilodus humboldtii, *Cuv. & Val.* xxii. p. 90.—Amazons.—Although Humboldt describes this fish as toothless, it is evident that it was a species of *Hemiodus*, closely allied to *H. notatus*.

† The principal character of this species, viz. the large scales below the lateral line, has been unjustifiably omitted: Kner has not perceived this; on the contrary, he says that his specimens perfectly agree with that figure!

River Capin.

a–b. Eight inches long. Purchased of Mr. Stevens.

3. Hemiodus unimaculatus.

? Charax, sp., *Gronov. Zoophyl.* i. p. 123. no. 379.
Salmo unimaculatus, *Bl.* taf. 381. fig. 3 (bad); *Bl. Schn.* p. 412.
Hemiodus crenidens, *Müll. Archiv*, 1842, p. 324.
—— unimaculatus, *Müll. & Trosch. Hor. Ichth.* iii. p. 9; *Cuv. & Val.* xxii. p. 124; *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 158.

D. 11. A. 11–12. V. 11.

The scales are of moderate size; those below the lateral line are not larger than those above. An ovate black spot immediately above the lateral line, behind the dorsal fin; each caudal lobe with a blackish longitudinal band.

Northern Brazil.

4. Hemiodus gracilis.

D. 11. A. 10. V. 11–12. L. lat. 42. L. transv. 7/5.

The scales above and below the lateral line are equal in size. The height of the body is contained six times in the total length (without caudal), the length of the head four times and a third; the distance between the gill-opening and the vertical from the origin of the dorsal is scarcely less than the length of the head. Upper jaw with about twenty crenulated teeth. Eye with broad adipose lids. The ventral fin is longer than the pectoral, and terminates at a great distance from the vent. Silvery with golden reflexions; a black caudal band along the lateral line, commencing in the vertical from the extremity of the ventral fins, and proceeding to the root of the caudal fin, where it is bent downwards, running along the lower caudal lobe, the remainder of which is red.

River Cupai.

a–b. Four inches long. Purchased of Mr. Stevens.

5. Hemiodus semitæniatus.

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 154. taf. 4. fig. 7.

D. 11. A. 10. V. 11. L. lat. 56–58. L. transv. 9/5.

The scales above and below the lateral line are equal in size. The height of the body is contained four times in the total length (without caudal), the length of the head four times and two-thirds. The distance between the gill-opening and the vertical from the origin of the dorsal equals the length of the head. Upper jaw with about twenty-eight crenulated teeth. Eye with broad adipose lids. The ventral fin is much longer than the pectoral. A black band proceeds from a black spot on the lateral line behind the dorsal fin to the root of the caudal; each caudal lobe with a blackish longitudinal band.

Rio Negro, Rio Guaporé.

6. Hemiodus immaculatus.

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 157. taf. 5. fig. 9.

D. 11. A. 12. V. 12. L. lat. 70–72. L. transv. $\frac{10\text{–}11}{7\text{–}6}$.

The scales above and below the lateral line are equal in size. The height of the body is contained four times and a half in the total length (without caudal), the length of the head four times and three-fourths. The distance between the gill-opening and the vertical from the origin of the dorsal is nearly equal to the length of the head. Upper jaw with about twenty-two crenulated teeth. Pectoral shorter than ventral. Coloration uniform, without lateral spot; a dark band along each caudal lobe. (*Kner.*)

Barra do Rio Negro.

7. Hemiodus longiceps.

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 152. taf. 3. fig. 6.

D. 11. A. 11. V. 12. L. lat. 79–85. L. transv. 17/12.

The scales below the lateral line are scarcely larger than those above. The height of the body is a little less than the length of the head, which is one-fourth of the total (without caudal). The distance between the gill-opening and the vertical from the origin of the dorsal is much less than the length of the head. Upper jaw with about twenty tricuspid teeth. Eye and its neighbourhood covered with adipose membranes. The pectoral and ventral fins are equal in length, more than half as long as the head. Silvery, the upper part of the gill-opening with the hinder margin black. Interradial membrane of the dorsal fin, and a large blotch in the fork of the caudal fin black; sometimes an ovate black spot on the lateral line behind the dorsal.

Rio Icanno; Rio Capin.

a. Fine specimen. River Capin. Purchased of Mr. Stevens.

8. Hemiodus microlepis.

Kner, Denkschr. Wien. Acad. 1859, xvii. p. 155. taf. 4. fig. 8.

D. 11. A. 11. V. 11. L. lat. 110–112. L. transv. $\frac{24\text{–}25}{15\text{–}14}$.

The scales above and below the lateral line are equally small. The height of the body is contained four times in the total length (without caudal), the length of the head four times and two-thirds. The distance between the gill-opening and the vertical from the origin of the dorsal is considerably less than the length of the head. Upper jaw with about thirty-two crenulated teeth*. Eye with a very broad adipose membrane, which has only a narrow slit before the pupil. Ventral much longer than pectoral, but not reaching to the vent. Silvery; a round black spot on the lateral line behind the dorsal fin. (*Kner.*)

Rio Guaporé: Barra do Rio Negro.

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* The text refers to a figure *a*, which should show the form of the teeth, but no such figure is given.

10. SACCODON.

Saccodon, *Kner, in Sitzgsber. Acad. Wiss. Münch.* 1863, p. 225.

"Os inferum, nasus prominens; dentes uniseriales solum intermaxillares, pauci, cochleariformes, intra alveolos margine crenatos absconditi; maxilla superior et inferior edentulæ; labium inferius tripartitum; pinnæ pectorales et ventrales valde evolutæ, abdomini approximatæ."

Ecuador.

1. Saccodon wagneri.

Kner, l. c.

B. 4. D. 11. A. 10. P. 17. L. lat. 40. L. transv. 4/3.

"Caput parvum, nasum versus valde declivum, rostrum tumidum, decussatum; dentes insaccati, utrinque quatuor."

Ecuador.

11. PARODON.

Parodon, *Cuv. & Val.* xxii. p. 50.

Dorsal fin placed nearly in the middle of the length of the body, above the ventrals; anal short. Body oblong, covered with scales of moderate size; belly rounded. Cleft of the mouth small; teeth few in number, rather small, in a single series; those of the intermaxillary are dilated and finely denticulated at their end, moveable; the lower jaw has three non-denticulated teeth on each side, the middle being toothless; the small maxillaries and the palate without teeth. The third infraorbital bone is very large, covering the præoperculum entirely. Nostrils close together. Gill-openings very wide, the gill-membranes not being attached to the isthmus.

Maracaïbo, Brazil.

1. Parodon suborbitalis.

Cuv. & Val. xxii. p. 51. pl. 637.

B. 4. D. 11. A. 9. V. 8. L. lat. 37.

The height of the body is one-fourth of the total length (without caudal), the length of the head less than one-fifth. (*Val.*)

Maracaïbo.

Kner (Denkschr. Acad. Wiss. Wien, 1859, xvii. p. 167. taf. 7. fig. 17) distinguishes specimens from the Amazons as a second species, which he calls *Parodon nasus*; he says that it has the end of the snout less truncated, and the intermaxillary teeth with more numerous denticulations, than *P. suborbitalis*; the length of the head is one-fifth of the total (without caudal).

Third Group. CITHARININA.

Characinidæ with minute labial teeth and with the dorsal fin rather long.

Tropical Africa.

12. CITHARINUS.

Citharinus, sp., *Cuv. Règne Anim.*
Citharinus, *Müll. & Trosch. Hor. Ichthyol.* iii. p. 8.

Dorsal fin placed nearly in the middle of the length of the body; anal rather long; ventrals below the dorsal. Body elevated, covered with small scales; belly rounded in front of the ventrals. Cleft of the mouth transverse, with very thin lips, each lip with a single series of minute, ciliiform, moveable teeth; palate toothless. Intestinal tract with numerous circumvolutions.

Rivers of tropical Africa.

1. Citharinus geoffroyi.

Serrasalmo citharinus, *Geoff. Descr. Eg. Poiss.* tab. 5. figs. 2 & 3.
Citharinus geoffroyi, *Cuv. Règne Anim.*; *Müll. & Trosch. Hor. Ichth.* iii. p. 9; *Cuv. & Val.* xxii. p. 95.

B. 4. D. 19. A. 28–30. V. 11. L. lat. 80–86.

The height of the body is more than one-half of the total length (without caudal); basal half of the adipose fin scaly. Generally uniform silvery, with the back greenish; sometimes the whole back and the tail brownish black.

Rivers of tropical Africa.

a. Adult. Lower Nile. From Dr. E. Rüppell's Collection.
b–d. Fine specimens. Chartoum. From Consul Petherick's Collection.
e–f. Adult: bad state. Gambia. Presented by the Earl of Derby.
g–h. Young. West Africa. Purchased of Mr. Stevens.

2. Citharinus latus.

Citharinus latus (*Ehrenb.*), *Müll. & Trosch. Hor. Ichth.* iii. p. 9. tab. 1. fig. 2 (dentition).

D. 22. A. 26. V. 11. L. lat. 68.

Adipose fin larger than in the preceding species.

Nile.

Müller and Troschel distinguish this second species of *Citharinus*, to which none of our specimens can be referred; Valenciennes doubts its validity.

Fourth Group. ANOSTOMATINA.

Characinidæ with an adipose fin and a short dorsal, with the teeth in both jaws well developed, with the gill-membranes grown to the isthmus, and with the nasal openings remote from each other.

South America.

13. ANOSTOMUS.

Anostomus, *Gronov. Mus. Ichth.* ii. p. 13, and *Syst. ed. Gray*, p. 153.
Schizodon, *Agass. in Spix, Pisc. Bras.* p. 66.

Dorsal fin placed in the middle of the length of the body, above the ventrals; anal short. Body oblong, covered with scales of moderate size. Belly rounded. Cleft of the mouth small; intermaxillary and mandible with a single series of fixed, flat, serrated incisors; palate toothless. Nostrils remote from each other: the posterior open, the anterior with a small tube. Gill-openings rather narrow, the gill-membrane being grown to the isthmus, without free hinder edge.

South America, east of the Andes.

1. Anostomus salmoneus.

Anostomus, *Gronov. Mus. Ichth.* ii. p. 13. tab. 7. fig. 2; *Müll. & Trosch. Hor. Ichth.* i. p. 10.
Salmo anostomus, *L. Syst. Nat.* i. p. 514.
Leporinus anostomus, *Cuv. & Val.* xxii. p. 38.
Anostomus salmoneus, *Gronov. Syst. ed. Gray*, p. 153.

D. 11. A. 10. V. 9. L. lat. 39. L. transv. 4/4.

The length of the head is more than the height of the body, and one-fourth of the total (without caudal); cleft of the mouth directed upwards, with the lower jaw strongly projecting. Back with alternating yellowish and brown longitudinal streaks; sides yellowish, with a broad brown band running from the extremity of the snout through the eye to the caudal fin; belly with a brownish band on each side.

British Guiana.

a. Young. Essequibo. From Mr. Ehrhardt's Collection.

2. Anostomus vittatus.

Piabuca vittata, *Cuv. & Val.* xxii. p. 115; *Casteln. Anim. Amér. Sud, Poiss.* p. 64. pl. 32. fig. 1.

D. 11. A. 9. V. 10. L. lat. 45.

A blackish streak runs along the middle of the tail; trunk with three transverse band-like spots. The lower jaw projects beyond the upper.

Rio Araguay.

3. Anostomus gracilis.

Schizodon gracilis, *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 160. taf. 5. fig. 11.

D. 11. A. 10. V. 9. L. lat. 43–44. L. transv. 5/4.

The length of the head is one-fourth of the total (without caudal). Cleft of the mouth turned upwards. Each jaw with eight bicuspid incisors. A round blackish spot on the lateral line, below the dorsal fin; another behind the gill-opening. (*Kner.*)

Rio Guaporé.

4. Anostomus trimaculatus.

Schizodon trimaculatus, *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 161. taf. 6. fig. 12.

D. 11. A. 10. V. 9. lat. 42–43. L. transv. 6/5.

The length of the head is two-ninths of the total (without caudal). Cleft of the mouth directed upwards. Each jaw with eight crenulated incisors. A blackish blotch on the operculum; a round black spot on the lateral line, below the dorsal, and another small one at the root of the caudal fin. (*Kner.*)

Matogrosso.

5. Anostomus fasciatus.

Curimata fasciatus, *Spix, Pisc. Bras.* tab. 36.
Schizodon fasciatus, *Agass. in Spix, Pisc. Bras.* p. 66; *Müll. & Trosch. Hor. Ichth.* iii. p. 10. tab. 1. figs. 5, 5 *a*; *Schomb. Fish. Guiana,* i. p. 252. pl. 26.
Piabuca schizodon, *Cuv. & Val.* xxii. p. 112.

D. 12. A. 11. V. 9. L. lat. 42–43. L. transv. 4/5.

The length of the head is two-ninths of the total (without caudal). The lower jaw scarcely projecting beyond the upper. There are eight broad teeth in each jaw, each tooth with a convex serrated margin. Body with five cross-bands: one across the middle of the nape, the second below the dorsal, the third between dorsal and adipose fin, the fourth below the adipose fin, the fifth, spot-like, at the root of the caudal. In young specimens each of these cross-bands terminates in a darker blotch on the side of the body.

Brazil, Guianas, Nicaragua.

a, b–d. Adult and young. British Guiana.
e. Adult. Caraccas.

6. Anostomus tæniatus.

Schizodon tæniatus, *Kner, Denkschr. Wien. Acad.* 1859, xvii. p. 159. taf. 5. fig. 10.

D. 12. A. 10. V. 10. L. lat. 44. L. transv. 5/5.

The length of the head is rather less than one-fifth of the total (without caudal). The lower jaw projects beyond the upper. There are eight incisors in each jaw; they have the apex truncated, and only the upper ones are serrated, the lower having entire margins. A dark band runs from the upper part of the gill-opening to the middle of the root of the caudal, where it terminates in a black spot, which is more distinct in young examples than in old ones.

Brazil.

a–d. Fine specimens. River Capin. Purchased of Mr. Stevens.
e. Half-grown. River Cupai. Purchased of Mr. Stevens.

7. **Anostomus isognathus.**

Schizodon isognathus, *Kner, Denkschr. Acad. Wiss. Wien*, 1859, xvii. p. 163. taf. 6. fig. 13.

D. 11–12. A. 10. L. lat. 44–46. L. transv. $\frac{6\frac{1}{2}}{5}$.

The length of the head is a little more than one-fifth of the total (without caudal); the lower jaw does not project beyond the upper. Each jaw has the incisors crenulated, eight in number. A dark band runs from the upper part of the gill-opening to the middle of the fork of the caudal. (*Kner*.)

Rio Cujaba.

8. **Anostomus nasutus.**

Schizodon nasutus, *Kner, Denkschr. Acad. Wiss. Wien*, 1859, xvii. p. 164. taf. 7. fig. 14.

D. 11–12. A. 9–10. V. 10. L. lat. 42–44. L. transv. $\frac{5-5\frac{1}{2}}{4-4\frac{1}{2}}$.

The length of the head is one-fifth of the total (without caudal). Snout somewhat pointed, with the upper jaw projecting beyond the lower. Each jaw with eight crenulated teeth. Coloration uniform: a triangular spot on the root of the caudal fin, extending over the middle of its fork. (*Kner*.)

Irisanga.

14. RHYTIODUS.

Rhytiodus, *Kner, Denkschr. Acad. Wiss. Wien*, 1859, xvii. p. 165.

Dorsal fin placed before the middle of the length of the body, above the ventrals; anal short. Body oblong, covered with scales of moderate or rather small size. Belly rounded. Cleft of the mouth very small; intermaxillary and mandible with a single series of small compressed teeth, longitudinally keeled in front: those in the upper jaw with a single point, those in the lower with two keels and two points; palate toothless. Nostrils remote from each other. Gill-openings rather narrow, the gill-membrane being grown to the isthmus. Eyes with a broad adipose circular membrane.

Brazil.

1. **Rhytiodus microlepis.**

Kner, *l. c.* taf. 7. fig. 15.

B. 4. D. 11–12. A. 10. V. 9–10. L. lat. 87–90. L. transv. $\frac{11-12}{9-8}$.

The height of the body equals the length of the head, and is contained five times and one-third in the total (without caudal). Jaws equal in length anteriorly. Coloration uniform brown. (*Kner*.)

Barra do Rio Negro.

2. Rhytiodus argenteo-fuscus.

Kner, l. c. p. 166. fig. 16.

D. 11. A. 11. V. 9. L. lat. 55–56. L. transv. 7/6.

The height of the body is a little more than the length of the head, and contained five times and one-third in the total (without caudal); head much depressed. Brown above, silvery below. (*Kner.*)

Rio Negro.

15. LEPORINUS*.

Leporinus, *Spix, Pisc. Brasil.* p. 65.

Dorsal fin placed nearly in the middle of the length of the body; anal short; ventrals below the dorsal. Body oblong, covered with scales of moderate size; belly rounded. Cleft of the mouth small, with the lips well developed; teeth in the intermaxillary and mandible, few in number, flattened, with the apex more or less truncated, and not serrated; the middle pair of teeth is the longest in both jaws; palate toothless. Nostrils somewhat remote from each other: the posterior open, the anterior with a short tube. Gill-membranes grown to the isthmus, without posterior free margin.

South America, east of the Andes.

1. Leporinus frederici.

Salmo frederici, *Bloch*, taf. 378; *Bl. Schn.* p. 403.
Curimatus acutidens, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 8. fig. 1.
Leporinus frederici, *Cuv. & Val.* xxii. p. 25.

D. 12. A. 11. V. 9. L. lat. 38–39. L. transv. 5/6.

The length of the head is one-fourth of the total (without caudal); the eye occupies the middle of the length of the head; incisors with the inner surface brown, and with the edge produced into a point. The pectoral fin terminates at a great distance from the ventral. Three rounded black spots along the lateral line, the first below the hinder half of the dorsal, the third at the root of the caudal.

Guianas, Brazil.

a–b. Fine specimens. Essequibo River. From Mr. Ehrhardt's Collection.
c. Young. River Cupai. Purchased of Mr. Stevens.

2. Leporinus obtusidens.

Curimatus obtusidens, *Valenc. in d'Orb. Voy. Amér. Mérid. Poiss.* pl. 8. fig. 2.
Leporinus obtusidens, *Cuv. & Val.* xxii. p. 28.

D. 12. A. 11. L. lat. 42.

The length of the head is one-fifth of the total (without caudal).

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* 1. Leporinus maculatus, *Müll. & Trosch. Hor. Ichthyol.* iii. p. 11; ? *Cuv. & Val.* xxii. p. 31; ? *Casteln. Anim. Amér. Sud, Poiss.* p. 58. pl. 29. fig. 2.—British Guiana; ? Brazil.

Incisors obtuse, truncated. Three blackish spots along the lateral line, like *L. frederici*.

Buenos Ayres; Brazil.

3. Leporinus megalepis.

Günth. Ann. & Mag. Nat. Hist. 1863, xii. p. 443.

D. 12. A. 11 (–12). V. 9. L. lat. 33–36. L. transv. $\frac{5}{5-6}$.

This species differs from *L. frederici* only in having larger scales. Young specimens (from the Essequibo) have sometimes large blackish spots on the back, arranged in two or three irregular series, besides the three black spots on the lateral line.

a–c. Adult and young. Essequibo River. From Mr. Ehrhardt's Collection.—Types of the species.
d. Adult. British Guiana. Presented by Sir R. Schomburgk.
e–f. Half-grown. Surinam. From the Stuttgart Museum.
g. Young. River Cupai. Purchased of Mr. Stevens.
h, i–l. Adult and half-grown. Bahia. From Dr. O. Wucherer's Collection.
m. Half-grown. South America. From the Collection of the Zoological Society.
n–o. Adult: skins. Rio Janeiro. Purchased of Mr. Gardiner.

4. Leporinus leschenaultii.

? Leporinus leschenaultii, *Cuv. & Val.* xxii. p. 30. pl. 635.

D. 12–13. A. 11–12. L. lat. 37–39. L. transv. $\frac{5-6}{6}$.

The height of the body is somewhat more than the length of the head, which is contained thrice and a half or thrice and two-thirds in the total length (without caudal). The upper profile, above the occiput, is a little concave; the eye is nearer to the extremity of the snout than to the gill-opening. Incisors with the apex truncated, only the lower ones are somewhat pointed. The pectoral fin terminates at a short distance from the ventral. Three large rounded black spots along the lateral line: the first below the hinder half of the dorsal, and the third, which is very indistinct, at the root of the caudal; sometimes traces of another blackish spot on the gill-opening.

Guiana, Brazil, Ecuador.

a. Several specimens. Andes of Western Ecuador. From Mr. Fraser's Collection.
b–c. Young. River Capin. Purchased of Mr. Stevens.
d. Adult: skin.

We have but little doubt that our specimens belong to *L. leschenaultii*, although they agree better with the description than with the figure quoted. But the latter itself is not quite in accordance with the description, for the illustration of which it is given, as it does not express the character of the shortness of the body, by which the species is said to be distinguished.

5. Leporinus bimaculatus.

Casteln. Anim. Amér. Sud, Poiss. p. 58. pl. 29. fig. 1.

Two large black spots on the lateral line: the first below the origin of the dorsal, and the second corresponding to the space between dorsal and adipose fins. (*Casteln.*)

Rio Vermelho de Goyaz.

6. Leporinus fasciatus.

Salmo fasciatus, *Bloch*, taf. 379.
Leporinus novem-fasciatus, *Spix, Pisc. Brasil.* p. 65. tab. 37.
—— fasciatus, *Cuv. & Val.* xxii. p. 34.

D. 12. A. 11. V. 11. L. lat. 42. L. transv. 7/7.

The height of the body is contained thrice and two-thirds in the total length (without caudal), the length of the head four times. The eye is somewhat nearer to the end of the operculum than to the extremity of the snout. Lips fringed. Eleven blackish cross-bands: the first across the interorbital space, the second on the nape of the neck, the third and fourth in front of the dorsal, the sixth, seventh, and eighth between dorsal and adipose fins, the ninth and tenth behind the adipose fin, the eleventh on the base of the caudal fin.

Surinam, Brazil.

a–b. Fine specimens. Essequibo. From Mr. Ehrhardt's Collection.
c. Young. River Cupai. Purchased of Mr. Stevens.

7. Leporinus affinis.

D. 12. A. 11. V. 11. L. lat. 43. L. transv. 8/8.

Closely allied to *L. fasciatus*, but with fewer bands.

The height of the body is contained thrice and three-fourths in the total length (without caudal), the length of the head four times and two-fifths or four times and one-fourth. The eye occupies the middle of the length of the head. Lips fringed. Nine blackish cross-bands: the first across the interorbital space, the second on the nape of the neck, the third and fourth in front of the dorsal, the sixth and seventh between the dorsal and the adipose fins, the eighth and ninth between the adipose and caudal fins.

Para.

a–b. Fine specimens. River Capin. Purchased of Mr. Stevens.
c–d. Young. From the Collection of the Zoological Society.

8. Leporinus pachyurus.

Cuv. & Val. xxii. p. 36; *Casteln. Anim. Amér. Sud, Poiss.* p. 59. pl. 30. fig. 1.

D. 12. A. 11. V. 10. L. lat. 40. L. transv. 6/7.

The height of the body is two-sevenths of the total length (without caudal), the length of the head rather more than one-fourth; the eye is somewhat nearer to the end of the operculum than to the

extremity of the snout; incisors broad, truncated. The pectoral terminates at some distance from the ventral. Coloration uniform.
Rio Araguay, Rio Cipo.

a. Adult: skin. Rio Cipo. Presented by Ch. Cumberland, Esq.—Vernacular name: Piao.

9. **Leporinus margaritaceus.**

D. 12. A. 11. V. 10. L. lat. 39. L. transv. 6/6.

The height of the body equals the length of the head, and is one-fifth of the total (without caudal). The eye is a little nearer to the end of the operculum than to the extremity of the snout; its diameter is two-thirds of the width of the interorbital space, and one-fourth of the length of the head. Lips rather thick, not fringed. Teeth rather narrow, the lower obliquely truncated. The distance of the first dorsal ray from the extremity of the snout equals that from the adipose fin. Anal rays long, reaching beyond the root of the caudal if laid backwards. Coloration uniform, each scale with a broad pearl-coloured margin; an indistinct yellowish band along the side of body and tail, below the lateral line.
British Guiana.

a. Eight and a half inches long. Presented by Sir R. Schomburgk.

10. **Leporinus elongatus.**

Cuv. & Val. xxii. p. 37.

D. 12. A. 11. V. 9. L. lat. 42.

Body elongate, its height being one-fifth of the total length (with the caudal?); the anal fin does not extend to the root of the caudal if laid backwards. Coloration uniform, each scale with a broad darker margin. (*Val.*)
Rio San Francisco, Rio de la Plata.

11. **Leporinus nigro-tæniatus.**

Chalceus nigrotæniatus, *Schomb. Fish. Guian.* i. p. 213. pl. 13. fig. 2.
Leporinus nigrotæniatus, *Müll. & Trosch. Hor. Ichth.* i. p. 11. tab. 1. fig. 7 (dentition); *Cuv. & Val.* xxii. p. 32.

D. 12. A. 11. V. 10. L. lat. 42. L. transv. 6/6.

The height of the body is equal to, or rather less than, the length of the head, which is contained four times and two-thirds in the total; the eye is somewhat nearer to the end of the operculum than to the extremity of the snout; anterior teeth with a narrow brownish edge. The pectoral terminates at a great distance from the ventral. A black band commences below the dorsal fin, and runs along the lateral line to the base of the caudal fin.
British Guiana.

a–b. Fine specimens. Essequibo. From Mr. Ehrhardt's Collection.
c. Adult: skin. Presented by Ch. Cumberland, Esq.

12. Leporinus melanopleura.

D. 12. A. 11. V. 10. L. lat. 35–37. L. transv. $\frac{3\frac{1}{2}}{5}$.

The height of the body is contained four times in the total length (without caudal), the length of the head four times and one-third. Eye rather small, one-fifth of the length of the head, occupying its middle. Teeth subtruncated, with brown tips. The origin of the dorsal fin is a little nearer to the extremity of the snout than to the root of the caudal fin. The pectoral terminates at a great distance from the ventral. Brownish green above, yellowish below; a broad black band, occupying one series of scales and two halves, runs from the gill-opening, immediately below the lateral line, to the root of the caudal. Fins immaculate.

Brazil.

a–b. Five inches long. Bahia. From Dr. O. Wucherer's Collection.
c. Five inches long: skin. Cipo River. Presented by Ch. Cumberland, Esq.

13. Leporinus striatus.

Kner, Denkschr. Acad. Wiss. Wien, 1859, xvii. p. 171. taf. 8. fig. 18.

D. 10–11. A. 9. V. 9. L. lat. 35–36. L. transv. 5/4.

The height of the body is more than the length of the head, which is two-ninths of the total (without caudal); the eye is one-fourth of the length of the head, and occupies its middle. The origin of the dorsal fin is nearer to the extremity of the snout than to the root of the caudal. The pectoral terminates at some distance from the ventral. A blackish band runs from the angle of the mouth along the lateral line to the posterior margin of the caudal; a second, more indistinct, from above the gill-opening to the adipose fin; a third, also indistinct, from the occiput to the dorsal fin. (*Kner.*)

Irisanga and Caiçara in Matogrosso.

14. Leporinus vittatus.

Leporinus vittatus, *Cuv. & Val.* xxii. p. 33; *Casteln. Anim. Amér. Sud, Poiss.* pl. 29. fig. 3.
—— pictus, *Kner, Denkschr. Acad. Wiss. Wien*, 1859, xvii. p. 172. taf. 8. fig. 19.

D. 11. A. 10. V. 9. L. lat. 42–45. L. transv. 5/4.

Body rather elongate; teeth truncated; basal portion of the caudal fin scaly. Head with blackish dots; each scale on the back with a black spot at the base; an indistinct blackish band along the lateral line; each lobe of the caudal fin with two oblique black bands; dorsal with a black cross-band.

Rio Araguay; Irisanga.

Fifth Group. TETRAGONOPTERINA.

Characinidæ with an adipose fin and with a short dorsal, with the teeth in both jaws well developed, compressed, notched or denticulated, with the gill-membranes free from the isthmus, and with the nasal openings close together.

South America and tropical Africa.

16. PIABUCINA.

Piabucina, *Cuv. & Val.* xxii. p. 161.

Dorsal fin placed in, or somewhat behind, the middle of the length of the body, immediately behind the ventrals; anal rather short. Body oblong, covered with scales of moderate size; belly rounded. Lateral line none. Cleft of the mouth of moderate width: teeth rather small, tricuspid, those of the intermaxillary in a single, those of the mandible in a double series; maxillary with a very few small teeth; palate toothless. Nostrils close together. Gill-openings wide, the gill-membranes not being attached to the isthmus.

Maracaïbo.

1. Piabucina erythrinoides.

Cuv. & Val. l. c. pl. 641.

B. 4 D. 10. A. 12. V. 8. L. lat. 37.

The origin of the dorsal fin is nearly in the middle between the end of the snout and the root of the caudal. The height of the body equals the length of the head, and is contained five times and a half in the total (without caudal); the lower jaw is longer than the upper; the middle postorbital very narrow. A blackish spot on the base of the anterior dorsal rays, another on the root of the caudal fin. (*Val.*)

Maracaïbo.

2. Piabucina unitæniata.

D. 10. A. 11. V. 8. L. lat. 27. L. transv. 8.

The height of the body equals the length of the head, and is one-fourth of the total (without caudal). Lower jaw obtuse, projecting beyond the upper; the maxillary extends beyond the anterior margin of the orbit. The diameter of the eye is two-thirds of the width of the interorbital space, somewhat less than the extent of the snout, and one-fifth of the length of the head. The middle postorbital is as high as long. The origin of the dorsal fin is nearer to the root of the caudal than to the end of the snout, and behind the vertical from the base of the ventral. Adipose fin very small; caudal forked, with its basal half scaly. The length of the pectoral is three-fifths of that of the head, and somewhat more than one-half of its distance from the ventral. Ventral shorter than pectoral. Brownish; an indistinct dark band runs from the end of the operculum to the lower half of the base of the caudal fin.

British Guiana.

a. Five inches long. Presented by Sir R. Schomburgk.

17. ALESTES.

Alestes, sp., *Müll. & Trosch. Hor. Ichth.* i. p. 12.
Alestes et Brycinus, *Cuv. & Val.*

The dorsal fin is placed in the middle of the length of the body, behind the ventrals; anal fin rather long. Body oblong, covered with scales of moderate or large size; belly rounded. Cleft of the mouth rather small. Maxillary teeth none; intermaxillary teeth in two series: those of the front series more or less compressed, more or less distinctly tricuspid; the teeth of the hinder series are broad, molar-like, each armed with several pointed tubercles. Teeth in the lower jaw in two series: those in the front series laterally compressed, broader behind than in front; the hinder series is composed of two conical teeth. All the teeth are strong, few in number. Nostrils close together, separated by a valve only. Gill-opening wide, the gill-membranes being united for a short space only, and not grown to the isthmus.

Tropical Africa.

The species may be brought into two groups:—

* Scales of moderate size: *Alestes*, m.
** Scales very large: *Brycinus*, Val.

* Scales of moderate size.

1. Alestes dentex.

Raches.
Salmo dentex, *Hasselq. Reise Palæst.* p. 437.
—— niloticus, *Forsk. Descript. Anim.* p. 66. no. 97 *b*.
Characinus niloticus, *Geoffr. St.-Hil. Descr. Eg. Poiss.* pl. 4. fig. 2.
Myletes hasselquistii, *Cuv. Mém. Mus.* iv. p. 449. pl. 21. fig 2.
Alestes dentex, *Müll. & Trosch. Hor. Ichth.* i. p. 13. pl. 2. fig. 6 (dentition); *Heckel, in Russegger, Reise*, ii. part 3. p. 307. taf. 21. fig. 2.
—— hasselquistii, *Cuv. & Val.* xxii. p. 180.

D. 10. A. 23–24. V. 10. L. lat. 45. L. transv. 9/3½. Vert. $\frac{28}{18\text{-}20}$.

The height of the body is a little more than one-fourth of the total length (without caudal), the length of the head one-fifth. Teeth of moderate strength, not coloured. Body silvery.

Nile.

a–c. Fine specimens. Chartoum. From Consul Petherick's Collection.
d. Half-grown: skeleton. Chartoum. From Consul Petherick's Collection.
e. Adult: skeleton. Lower Nile. From Dr. Ruppell's Collection.

2. Alestes sethente.

Cuv. & Val. xxii. p. 190.

D. 10. A. 22. V. 10. L. lat. 42. L. ransv. 9/3½.

Extremely similar to *A. dentex*, but with the teeth twice as strong, and brown at the crown. The height of the body is contained thrice and two-thirds in the total length (without caudal), the length of the head thrice and three-fourths.

West Africa.

a. Adult: not good state. Gambia. Presented by the Earl of Derby.

3. Alestes kotschyi.

Salmo niloticus, *L. Syst. Nat.* ed. 12. i. p. 514 (not *Hasselq.*).
Cyprinus dentex, *L. l. c.* p. 531 (not *Hasselq.*).
Myletes hasselquistii, *Cuv. Règne Anim. Ill. Poiss.* pl. 103. fig. 1 (bad).
? Myletes baremoze, *Joannis, Guér. Mag. Zool.* 1835, pl. 6.
Alestes kotschyi, *Heckel, in Russegger, Reise,* ii. part 3. p. 308. taf. 21. fig. 4.

D. 10. A. 26–28. V. 10. L. lat. 46. L. transv. 9½/3½.
Vert. 24/23.

The height of the body is two-ninths or less than one-fourth of the total length (without caudal), the length of the head rather less than one-fifth. Teeth not coloured. The pectoral fin terminates at some distance from the root of the ventral. Body silvery.

a–d. Fine specimens. Chartoum. From Consul Petherick's Collection.
e–i. Adult. Lower Nile. From Consul Petherick's Collection.
k–l. Adult. Nile. Presented by J. Burton, Esq.
m–o. Half-grown. Nile. Presented by Dr. E. Rüppell.
p. Adult: skeleton. Nile. From Dr. Rüppell's Collection.

** Scales very large.

4. Alestes macrolepidotus.

Brycinus macrolepidotus, *Cuv. & Val.* xxii. p. 157. pl. 639.
Alestes macrolepidotus, *Bilharz, Sitzgsber. Acad. Wiss. Wien,* 1852, iii. taf. 37; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 19.

D. 10. A. 16. V. 10. L. lat. 23. L. transv. 4/2.

Teeth of the lower jaw with three or four points. The length of the head is one-fourth, or somewhat less than one-fourth, of the total (without caudal). Silvery, each scale with a darker base; sometimes a blackish spot behind the gill-opening, above the lateral line.

Nile; West Africa.

a. Nineteen inches long. Nile. Presented by Dr. E. Rüppell.
b. Half-grown. Chartoum. From Consul Petherick's Collection.

18. BRACHYALESTES*

Alestes, sp., *Müll. & Trosch. l. c.*

The dorsal fin is placed in the middle of the length of the body, above the ventrals; anal of moderate length. Body oblong, covered with scales of moderate or large size; belly rounded in front of the ventrals. Mouth, teeth, nostrils, and gill-openings as in *Alestes*; the intermaxillary extends downwards on each side, covering a portion of the anterior edge of the maxillary.

Tropical Africa.

1. Brachyalestes nurse.

Myletes nurse, *Rüpp. Forts. Beschr. neuer Fische des Nils*, p. 12. taf. 2. fig. 3†.

—— guilé, *Joannis, Guér. Mag. Zool.* 1835, pl. 9.

Alestes nurse, *Müll. & Trosch. Hor. Ichth.* i. p. 13; *Cuv. & Val.* xxii. p. 188.

Chalceus guile, *Cuv. & Val.* xxii. p. 255.

D. 10. A. 16‡. L. lat. 29. L. transv. $\frac{5\frac{1}{2}}{2\frac{1}{2}}$. Vert. 23/15.

The height of the body is one-third, or somewhat less than one-third, of the total length (without caudal), the length of the head a little more than one-fourth. The origin of the dorsal fin is only a little behind that of the ventral; the pectoral terminates at some distance from the ventral. Bright silvery, with a very indistinct blackish spot above the lateral line, behind the gill-opening; sometimes another large blackish blotch at the base of the caudal fin. Iris light yellow.

Nile.

a–e. Fine specimens. Chartoum. From Consul Petherick's Collection.

f. Adult: skeleton. Chartoum. From Consul Petherick's Collection.

Valenciennes refers some specimens of this species to the genus *Chalceus*, with the name of *C. guile*; he says that it has the intermaxillary teeth in a triple series. The specimens in the British Museum have enabled me to convince myself that these teeth are, normally, in a double series, as in all the other African species of *Alestes* and *Brachyalestes*; but in old examples the second tooth of the front series of each side is generally placed a little backwards, as if there was not room enough for it between the first and third teeth; and there always remains a free space indicating the original place which it had occupied at an earlier age. For in younger examples the front series of intermaxillary teeth is uninterrupted;

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* 1. Myletes allenii, *Benn. Proc. Zool. Soc.* 1834, p. 45.—Quorra.

† There is a misprint in this description: instead of "Brfl. 1/8. Bafl. 1/11," read "Bafl. 1/8. Brfl. 1/11." To this error the Guilé of Joannis partly owes its introduction into the system as a species.

‡ This number includes the first rudimentary ray (the third simple ray being the longest in this fin); and the last ray, which is split to the base, is counted as two.

and I have examined several specimens in which the second tooth was only slightly dislodged, and in one case it occupied its original place on one side and was pushed backwards on the other.

2. Brachyalestes ruppellii.

D. 10. A. 17*. L. lat. 30. · L. transv. $\frac{5\frac{1}{2}}{2\frac{1}{2}}$.

The height of the body is one-third, or a little less than one-third, of the total length (without caudal), the length of the head one-fourth, or, in younger examples, somewhat more than one-fourth. The origin of the dorsal fin is a little behind that of the ventral, midway between the extremity of the snout and the root of the caudal. The pectoral terminates close to the ventral. Bright silvery, with a very indistinct blackish humeral spot; caudal spot absent or very indistinct. Iris golden, with a broad black ring; sometimes entirely black in specimens preserved in spirits.

Upper Nile.

a–c. Adult ($6\frac{1}{2}$ inches long) and half-grown. Chartoum. From Consul Petherick's Collection.

This species is scarcer than its congener from the same river, to which it is extremely similar; nevertheless there can be no doubt that it is specifically distinct, having constantly one anal ray more, a peculiarly dark eye, and a somewhat longer pectoral fin. It is perfectly evident to which of the two species the name of *B. nurse* must be applied: Rüppell states $\frac{1}{14}$ anal rays in his description (and when we compare this with the figure, we find that he counted the middle simple ray as first, and the last as two), and the pectoral is represented short, both of which characters agree with our *B. nurse*. Thus, the question remains, whether our fish be identical with the Guilé of Joannis and Valenciennes. The distinctive characters brought forward by the former are of so trivial a nature, that they need no further comment; whilst we have shown above that the character of a triple series of teeth, assigned to the Guilé by Valenciennes, is peculiar to the old age of *B. nurse*. Moreover Joannis counted 16 anal rays, fortunately explaining the way in which he obtained that number, and which agrees with that adopted by myself, whilst Valenciennes states even one ray less; this is sufficient proof of the correctness of the opinion that the Guilé of the French naturalists is synonymous with Rüppell's Nurse.

3. Brachyalestes longipinnis.

D. 10. A. 21–22. V. 8. L. lat. 26. L. transv. $5/2\frac{1}{2}$. Vert. 16/17.

The height of the body is contained twice and two-thirds or twice and three-fourths in the total length (without caudal), the length of the head four times; the teeth of the hinder intermaxillary series are compressed, multicuspid, without enlarged anterior portion; the two conical teeth of the mandible very small. The maxillary extends to below the anterior margin of the orbit. The origin of the dorsal fin is a little behind that of the ventral, and somewhat nearer to the extremity of the snout than to the base of the caudal. The pectoral extends to the ventral. Adult specimens with the fourth and fifth dorsal rays produced into a filament; anal with the lower margin convex. The lateral line runs entirely in the lower half of the body, occupying the lowermost series of scales on the free portion of the tail. Silvery, back blackish; a broad black band runs along the middle of the free portion of the tail and along the middle caudal rays; vertical fins with a reddish hue; the paired fins with a blackish margin.

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* This number is obtained by counting the rays in the same manner as in *B. nurse*, namely, by counting the first rudimentary ray, by taking the longest simple one as third, and by reckoning the last, which is split to the base, as two.

West Africa.

a–e. Adult (4 inches long) and half-grown. Sierra Leone. Purchased of Mr. Stevens.
f. Half-grown. River Congo. Presented by the Royal College of Surgeons.
g. Young. West Africa. Purchased of Mr. Damon.
h. Adult: skeleton. Sierra Leone. Purchased of Mr. Stevens.

4. Brachyalestes imberi.

Alestes imberi, *Peters, Monatsber. Acad. Wiss. Berl.* 1852, p. 276.

D. 10. A. 17–18. V. 10. L. lat. 20. L. transv. 7.

The height of the body is somewhat more than one-third of the total length (without caudal), the length of the head one-fourth. The origin of the dorsal fin is a little in front of that of the ventral. Silvery, with a black spot behind the shoulder, and with another one at the root of the caudal.

Zambesi.

a–b. Adult and young. Presented by Professor Peters.

5. Brachyalestes acutidens.

Alestes acutidens, *Peters, Monatsber. Acad. Wiss. Berl.* 1852, p. 276.

D. 10. A. 19. V. 9. L. lat. 23. L. transv. 4/2.

The height of the body is contained thrice and two-thirds in the total length (without caudal), the length of the head four times. The origin of the dorsal fin is a little behind that of the ventral. A broad silvery band runs along the side of the body.

Eastern Africa.

a–b. Zambesi. Presented by Professor Peters.
c. River Rovuma. Presented by Dr. Kirk.

19. TETRAGONOPTERUS*

Tetragonopterus, *Cuv. Mém. Mus.* 1818, iv. p. 455 (not Tetragonoptrus, *Klein*) †.

The dorsal fin is placed in the middle of the length of the body, above or immediately behind the ventrals; anal fin long. Body oblong or elevated, covered with scales of moderate size; belly rounded. Cleft of the mouth of moderate width. Anterior teeth strong, lateral teeth small. Intermaxillary and mandibulary teeth subequal in size, with a compressed and notched crown, the former in a double, the latter in a single series; maxillary with a few teeth near its articulation, rarely with the entire edge denticulated. The intermaxillary has no lateral process overlapping a part of the front of the maxillary. Nostrils close together, separated by a valve only. Gill-opening wide, the gill-membranes being free from the isthmus and separate. Gill-rakers setiform.

Tropical America.

The numerous species of this genus may be subdivided as follows:—

A. Anal rays forty or more.
  a. Maxillary with only a few rudimentary teeth near its articulation, p. 318.
  b. The entire edge of the maxillary denticulated, p. 319.
B. Anal rays less than forty.
  a. Cleft of the mouth of moderate width; maxillary without teeth along its edge, extending to, or not much beyond, the front margin of the eye.
    a. The height of the body is one-half, or more than one-half, of the total length (without caudal), p. 319.

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* 1. Tetragonopterus orbignyanus, *Cuv. & Val.* xxii. p. 147.—Buenos Ayres.
2. —— viejita, *Cuv. & Val.* xxii. p. 154.—Lake of Maracaïbo.
3. —— sawa, *Casteln. Anim. Amér. Sud, Poiss.* p. 65. pl. 33. fig. 1.—Rio Crixas.
4. —— mexicanus, *Filippi, in Guér. Rev. et Mag. Zool.* 1853, p. 166.—Mexico.
5. Pœcilurichthys brevoortii, *Gill, Ann. Lyc. Nat. Hist. New York*, 1858, p. 417.—Trinidad.
6. —— tæniurus, *Gill, l. c.* p. 418.—Trinidad.
7. —— pulcher, *Gill, l. c.* p. 419.—Trinidad.—In the descriptions of the three last-named species it is not stated whether the origin of the dorsal fin is behind, or opposite to, that of the ventral.
8. Pœcilurichthys (Hemigrammus) unilineatus, *Gill, l. c.* p. 420.—Trinidad. —Lateral line discontinued in the middle of the body. A. 27.

† Klein formed the name of *Tetragonoptrus* for fishes of the Linnean genus *Tetrodon*, giving at the same time an etymological explanation of the word. Artedi afterwards referred a South American Characinoid to the Kleinian genus, preserving the original and correct spelling. Cuvier, taking Artedi's species as the type of the genus, adopted the name erroneously used by Artedi, but, misunderstanding the derivation of the word, wrote *Tetragonopterus*. In spite of the similarity of the two words, their meaning is sufficiently distinct to forbid the introduction of a new generic name, and the preservation of *Tetragonopterus* must be the more recommended as it is in common use, whilst *Tetrágonoptrus* will probably for ever remain a synonym.

β. The height of the body is less than one-half of the total length.

* The dorsal fin commences distinctly behind the origin of the ventral, p. 321.

** The origin of the dorsal and ventral fins are nearly in the same vertical, p. 328.

b. Cleft of the mouth rather wide; maxillary without teeth along its edge, long and narrow, extending to, or nearly to, below the centre of the eye. Dorsal fin above the ventral: *Creatochanes*, m., p. 329.

c. Cleft of the mouth of moderate width; the entire edge of the maxillary denticulated: *Hemibrycon*, m., p. 330.

A. Anal rays forty or more.

a. Maxillary with only a few rudimentary teeth near its articulation.

1. **Tetragonopterus spilurus.**

Cuv. & Val. xxii. p. 156.

D. 11. A. 48.

Ventral profile much arched; snout pointed. A silvery band along the side of the body. (*Val.*)

Surinam.

2. **Tetragonopterus argenteus.**

Cuv. Mém. Mus. iv. p. 455; *Cuv. & Val.* xxii. p. 132.

B. 4. D. 11. A. 40. V. 8. L. lat. 30.

The height of the body is not less than one-half of the total length (without caudal), the length of the head about one-fourth. Upper profile of the head concave; diameter of the eye equal to the width of the interorbital space, and one-half of the length of the head. The pectoral extends beyond the root of the ventrals. Maxillary with only a few teeth near its articulation. Two dark cross-bands descend from before the dorsal, one to the gill-opening, the other towards the middle of the pectoral fin. A black spot on the root of the caudal.

Bahia?

3. **Tetragonopterus rufipes.**

Valenc. in d'Orb. Voy. Amér. Mérid. Poiss. pl. 11. fig. 1; *Cuv. & Val.* xxii. p. 136.

D. 11. A. 40. V. 8. L. lat. 30.

The height of the body is three-fifths of the total length (without caudal), the length of the head somewhat more than a fourth. Upper profile concave; eye very large. Maxillary with only a few teeth near its articulation. Body without dark cross-bands; ventral and anal fins orange-red. (*Val.*)

Buenos Ayres.

b. The entire edge of the maxillary is denticulated.

4. Tetragonopterus artedii.

Cuv. & Val. xxii. p. 128 (not synon.).

D. 11. A. 40. V. 8. L. lat. 30.

The height of the body is not less than one-half of the total length (without caudal), the length of the head about one-fourth. Upper profile of the head concave; diameter of the eye rather more than the width of the interorbital space, and one-half of the length of the head. The pectoral extends beyond the root of the ventrals. Maxillary with a few conical teeth near its articulation, its entire edge being finely denticulated. Body with silvery longitudinal bands, without dark cross-bands. (*Val.*)

According to Valenciennes, this species would be conspicuously distinguished from *T. argenteus* and *T. rufipes* by the peculiar denticulation of the maxillary bones. But it is quite evident that it is not the species examined by Artedi and figured by Seba, which agrees in every respect with *T. chalceus*.

B. Anal rays less than forty.

a. Cleft of the mouth of moderate width; maxillary without teeth along its edge, extending to, or not much beyond, the front margin of the eye.

a. The height of the body is one-half, or more than one-half, of the total length (without caudal).

5. Tetragonopterus compressus.

D. 11. A. 33. V. 9. L. lat. 35. L. transv. 9/9.

Body much compressed and elevated, its greatest depth being contained once and two-thirds in the total length (without caudal). The lower profile is subsemicircular, and the pectoral fins are inserted at some distance above the ventral profile. The length of the head is one-fourth of the total (without caudal); interorbital space convex, its width equalling the diameter of the eye, which is two-fifths of the length of the head. The upper profile is deeply concave above the parietal region. The maxillary does not extend beyond the vertical from the front margin of the eye. The origin of the dorsal fin is vertically a little in front of that of the ventral. The pectoral reaches beyond the root of the ventrals. Silvery, with golden reflexions; back bluish; a round bluish spot on the shoulder, above the lateral line.

Guianas, Brazil.

a–b. Fine specimens, 3 inches long. Essequibo. From Mr. Ehrhardt's Collection.

c–d. Three and a half inches long. Surinam. Purchased of Mr. Frank.

e. Three and a half inches long. Marañon.

6. Tetragonopterus polylepis.

D. 11. A. 34. V. 8. L. lat. 43. L. transv. $\frac{10\frac{1}{2}}{10}$.

Body much compressed and elevated, its greatest depth being contained once and four-fifths in the total length (without caudal); the lower profile much arched. The length of the head is one-fourth of the total (without caudal); interorbital space very convex, its width being much more than the diameter of the eye, which is one-third of the length of the head. The upper profile is concave above the parietal region. The maxillary terminates in the vertical from the front margin of the eye. The origin of the dorsal fin is vertically behind the root of the ventral. The pectoral extends a trifle beyond the base of the ventral. Uniform silvery.

British Guiana.

a. Four and a half inches long. Presented by Sir R. Schomburgk.

7. Tetragonopterus chalceus.

Tetragonoptrus argenteus etc., *Artedi, in Seba,* iii. tab. 34. fig. 3.
Coregonus amboinensis, *Artedi, Species,* p. 44.
Tetragonopterus chalceus, *Agass. in Spix, Pisc. Bras.* p. 70. tab. 33. fig. 1; *Cuv. & Val.* xxii. p. 140.
—— schomburgkii, *Cuv. & Val.* xxii. p. 137.

D. 12. A. 33–34. L. lat. 30–32. L. transv. 7/4½.

The height of the body is contained twice in the total length (without caudal), the length of the head thrice and three-fourths; interorbital space flat, its width being rather less than the diameter of the eye, which is contained twice and one-third in the length of the head. The upper profile is concave above the parietal region. The maxillary extends a little beyond the front margin of the eye. The vertical from the origin of the dorsal fin falls immediately behind the root of the ventrals. The pectoral reaches a little beyond the base of the ventrals. A dark spot behind the shoulder is scarcely visible, and sometimes disappears entirely; base of the caudal more or less distinctly blackish.

British Guiana, Brazil.

a–b. Adult. British Guiana. Presented by Sir R. Schomburgk.
c. Fine specimen. Essequibo. From Mr. Ehrhardt's Collection.

8. Tetragonopterus orbicularis.

Cuv. & Val. xxii. p. 138; *Casteln. Anim. Amér. Sud, Poiss.* p. 65. pl. 32. fig. 3; *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 174.

D. 11. A. 34. L. lat. 35.

The height of the body is two-thirds of the total length (without caudal), the length of the head one-fourth. The upper profile of the head is concave; the diameter of the eye is two-fifths of the length of the head. The pectoral extends beyond the root of the ventral. Humeral and caudal spots generally present, and united by a silvery longitudinal band. (*Val.*)

Amazons; ? Essequibo.

β. The height of the body is less than one-half of the total length (without caudal).

* The dorsal fin commences distinctly behind the origin of the ventral.

9. Tetragonopterus brevirostris.

Chalceus brevirostris, *Günth. Proc. Zool. Soc.* 1859, p. 420.

D. 11. A. 37. L. lat. 46. L. transv. 6/7.

The height of the body is somewhat less than one-third of the total length (without caudal), the length of the head one-fourth. Interorbital space rather convex, its width being equal to the diameter of the eye, which is one-third of the length of the head, and a little longer than the snout. The upper profile is scarcely concave above the eye. The maxillary extends to below the anterior margin of the orbit. The vertical from the origin of the dorsal falls behind the root of the ventrals, and the last dorsal rays are vertically above the anterior rays of the anal fin. The pectoral reaches somewhat beyond the base of the ventral. Scales very thin. Bright silvery; a black band runs from the base of the caudal fin along its middle rays.

Western Andes of Ecuador.

a–b. Types of the species, 31 lines long. From Mr. Fraser's Collection.

10. Tetragonopterus abramis.

Jenyns, Zool. Beagle, Fish. p. 123. tab. 23. fig. 1.

D. 11. A. 28–31. L. lat. 43–47. L. transv. 10/8. Vert. 13/18.

The height of the body is two-fifths of the total length (without caudal), the length of the head rather less than one-fourth. Interorbital space very convex, its width being considerably more than the diameter of the eye, which is two-sevenths of the length of the head. The upper profile is a little concave above the eye. The maxillary extends somewhat beyond the anterior edge of the orbit. The vertical from the origin of the dorsal falls behind the root of the ventrals; the pectoral reaches to the ventral. An indistinct blackish humeral spot; another on the root of the caudal; both spots sometimes absent.

Rio Parana; Essequibo.

a–b. Adult. British Guiana. Presented by Sir R. Schomburgk.
c–d. Fine specimens. Essequibo. From Mr. Ehrhardt's Collection.
e. Adult: skeleton. British Guiana. Presented by Sir R. Schomburgk.

11. Tetragonopterus maculatus.

Charax no. 54, *Gronov. Mus. Ichth.* i. p. 19. tab. 1. fig. 5.
Albula maculata, *L. Mus. Ad. Fred.* p. 78. tab. 32. fig. 2.
Salmo bimaculatus, *L. Syst. Nat.* i. p. 513 (not syn.); *Bloch*, taf. 382. fig. 2; *Bl. Schn.* p. 413.
Tetragonopterus maculatus, *Müll. & Trosch. Hor. Ichth.* i. p. 14. taf. 3. fig. 4 (teeth).

Tetragonopterus linnæi, *Cuv. & Val.* xxii. p. 142.
—— gronovii, *Cuv. & Val.* xxii. p. 143; *Kner, Denkschr. Acad. Wiss. Wien*, 1859, xvii. p. 175.
Charax bimaculatus, *Gronov. Syst. ed. Gray*, p. 154.
Tetragonopterus vittatus, *Casteln. Anim. Amér. Sud, Poiss.* p. 66. pl. 33. fig. 3.

D. 11. A. 31–34. L. lat. 39. L. transv. 7/7½.

The height of the body is contained twice and two-fifths in the total length (without caudal), the length of the head four times; in young specimens the head is, comparatively, somewhat larger. Interorbital space very convex, its width being more than the diameter of the eye, which is two-sevenths of the length of the head. The upper profile is a little concave above the parietal region. The maxillary extends somewhat beyond the front margin of the eye. The vertical from the origin of the dorsal fin falls behind the root of the ventrals; the pectoral reaches a little beyond the root of the ventrals. A round black spot behind the shoulder; a blackish blotch on the base of the caudal fin, more distinct in young individuals than in old ones; both spots are united in young individuals by a silvery band, which is sometimes blackish along the middle.

Guianas, Brazil.

a–c, d–f. Adult, half-grown, and young. British Guiana.
g–k. Adult. Demerara. Presented by Dr. Hancock.
l–m. Half-grown. River Capin. Purchased of Mr. Stevens.
n–o. Half-grown and young. Pernambuco. Presented by J. G. R. Smith, Esq.
p. Half-grown. Purchased of Mr. Frank.
q. Adult: skin. From Gronow's Collection.—Type of the species.

12. **Tetragonopterus fasciatus.**

Chalceus fasciatus, *Cuv. Mém. Mus.* v. p. 352. pl. 26. fig. 2 *.
? Tetragonopterus rutilus, *Jenyns, Zool. Beagle, Fish.* p. 125. tab. 23. fig. 2.
Tetragonopterus fasciatus, *Cuv. & Val.* xxii. p. 149.

D. 11. A. 25–29. L. lat. 35–39. L. transv. $\frac{6\frac{1}{2}}{6}$.

The height of the body is contained twice and three-fifths or twice and two-thirds in the total length (without caudal), the length of the head four times or four times and a half. Interorbital space convex, its width being more than the diameter of the eye, which is two-sevenths of the length of the head. The upper profile is very little concave above the parietal region. The maxillary extends distinctly beyond the vertical from the front margin of the eye. The origin of the dorsal fin is vertically immediately behind the root of the ventrals. The pectoral reaches to, or a little beyond, the base of the ventrals. An indistinct round dark spot behind the shoulder, above the lateral line; generally a band-like blackish spot on the root of the caudal, sometimes extending forward to the humeral spot. Frequently the blackish band is entirely or partly replaced by a silvery band; sometimes the spots and bands are absent.

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* This figure is evidently taken from a dry example, and is very inaccurate; Cuvier himself says in the description that the lateral line is composed of forty scales, and that there are twelve longitudinal series. The figure, however, represents much smaller scales. A similar discrepancy exists between the descriptions of Cuvier and of Valenciennes; whilst the former has counted eighteen al rays, the latter states twenty-five.

Central and South America.

a, *b–d*. Adult and half-grown. Brazil. Presented by Lord Stuart.
e–h. Adult and half-grown. Western Ecuador. From Mr. Fraser's Collection.
i–l. Adult and half-grown. Huamuchal. From the Collection of Messrs. Godman and Salvin.
m–o. Adult. Rio Guacalate. From the Collection of Messrs. Godman and Salvin.
p–r. Adult. Rio Chisoy, Vera Paz. From the Collection of Messrs. Godman and Salvin.
s–u, *v–y*, *z–θ*. Adult. Mexico. From M. Sallé's Collection.
ι–κ. Half-grown. Cordova. Purchased of M. Parzudaki.
λ. Adult. Central America. From Mr. Gould's Collection.
μ. Half-grown. Guatemala. From Mr. Salvin's Collection.

If a figure published by Castelnau in Anim. Amer. Sud, Poiss. pl. 32. fig. 2. be correct, it cannot have been taken from *T. fasciatus*, which has considerably smaller scales and a less elevated body than are represented in that figure.

13. Tetragonopterus microstoma.

? Tetragonopterus fusco-auratus, *Casteln. Anim. Amér. Sud, Poiss.* p. 66. pl. 33. fig. 2.

D. 11. A. 27–29. L. lat. 35–37. L. transv. $\frac{6\frac{1}{2}}{6}$.

Very similar to *T. fasciatus*, but with shorter maxillaries.

The height of the body is contained twice and two-thirds or twice and three-fourths in the total length (without caudal), the length of the head four times and one-third or four times and one-fourth. Interorbital space convex, its width being considerably more than the diameter of the eye, which is two-sevenths of the length of the head. The upper profile is very little concave above the parietal region. The maxillary does not extend beyond the vertical from the front margin of the eye. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral reaches to, or a little beyond, the base of the ventrals. An indistinct round dark spot behind the shoulder, above the lateral line; generally a band-like blackish spot on the root of the caudal, both spots being united by a silvery band. Sometimes the spots and bands are absent.

Bahia.

a, *b–d*, *e–i*, *k–o*. Adult, half-grown, and young. Bahia. From Dr. O. Wucherer's Collection.

14. Tetragonopterus microphthalmus.

D. 11. A. 26–29. L. lat. 35–37. L. transv. 7/8.

Very similar to *T. microstoma*, but with shorter pectoral fins.

The height of the body is contained twice and three-fourths in the total length (without caudal), the length of the head four times or four times and one-third; interorbital space very convex, its width being much more than the diameter of the eye, which is nearly one-fourth of the length of the head. The upper profile is very little concave above the parietal region. The maxillary does not extend to the end of the first infraorbital bone, and terminates in the vertical from the front margin of the eye. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral does not extend to the ventral. A band-like blackish spot on the root of the caudal fin; generally a silvery band along the side.

Peru and Guatemala.

a–b. Adult. Pacific coast of Guatemala. From Mr. Salvin's Collection.
c–d. Adult. Lake of Amatitlan. From Mr. Salvin's Collection.
e–i. Adult and half-grown. Rio Rimac*. Presented by W. Nation, Esq.

15. Tetragonopterus panamensis.

D. 11. A. 28. L. lat. 35–36. L. transv. 8/7.

Very similar to *T. microstoma*, but with a greater number of series of scales above and below the lateral line.

The height of the body is contained twice and two-thirds or twice and three-fourths in the total length (without caudal), the length of the head four times or three times and three-fourths. Interorbital space convex, its width being more than the diameter of the eye, which is two-sevenths of the length of the head. The upper profile of the head is somewhat concave above the parietal region. The maxillary terminates in the vertical from the front edge of the eye. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral reaches to, or a little beyond, the base of the ventrals. Humeral and caudal spots present, united by a silvery longitudinal band.

Panama, Guatemala.

a. Fine specimen, 4 inches long. Pacific coast of Panama. From the Collection of Messrs. Godman and Salvin.
b–d. From $2\frac{1}{2}$ to 3 inches long. Yzabal. From the Collection of Messrs. Godman and Salvin.

16. Tetragonopterus dichrourus.

Kner, Denkschr. Acad. Wiss. Wien, 1859, xvii. p. 177. taf. 9. fig. 21.

D. 10. A. 25–26. L. lat. 36–38. L. transv. $\frac{5}{3-4}$.

The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head five times. Interorbital space convex, its width being equal to the diameter of the eye, which is one-third of the length of the head. The upper profile of the head is nearly straight. The maxillary does not extend beyond the vertical from the front margin of the eye. The origin of the dorsal fin is vertically above the hinder ventral rays. The pectoral extends on to the ventral. A silvery band along the side of the body; each caudal lobe with a blackish cross-band. (*Kner.*)

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* Valenciennes also has examined Tetragonopteres from the Rio Rimac, but he refers them to *T. scabripinnis*, Jenyns, a species different from *T. microphthalmus*.

Rio Guaporé, Rio Paraguay.

17. **Tetragonopterus brevimanus.**

D. 11. A. 21–23. L. lat. 38. L. transv. 6½/5½.

The height of the body is one-third of the total length (without caudal), the length of the head two-sevenths. Snout short and thick; interorbital space convex, its width being much more than the diameter of the eye, which is nearly one-fourth of the length of the head. The upper profile of the head is not concave. The maxillary extends somewhat beyond the vertical from the front margin of the eye. The origin of the dorsal fin is vertically immediately behind the root of the ventrals. The pectoral does not extend to the ventral. A band-like blackish spot on the root of the caudal fin.

Guatemala.

a–c. Adult. Yzabal. From the Collection of Messrs. Godman and Salvin.
d–f. Adult and half-grown. Rio S. Geronimo. From the Collection of Messrs. Godman and Salvin.
g–h. Half-grown. Guatemala. From the Collection of Messrs. Godman and Salvin.

18. **Tetragonopterus scabripinnis.**

Jenyns, Zool. Beagle, Fish. p. 125. pl. 23. fig. 3.

D. 10. A. 25. L. lat. 37–38. L. transv. 6/5.

The height of the body is one-third of the total length (without caudal), the length of the head two-sevenths. The upper profile of the head is scarcely concave. The maxillary extends beyond the front margin of the eye. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral extends beyond the base of the ventrals. A dusky spot on the shoulder, another blackish spot on the root of the caudal, both united by a silvery band. (*Jen.*)

Rio de Janeiro.

a–g. Adult and half-grown. Purchased of Mr. Cuming.
h–l. Adult and half-grown. Purchased of Mr. Frank.

I am not quite certain whether these specimens are correctly referred to *T. scabripinnis*, although they are very closely allied to it. They have a somewhat shorter head, the length of which is contained thrice and three-fourths in the total (without caudal); the anal rays vary from twenty-five to twenty-eight; and there are seven series of scales between the lateral line and the origin of the dorsal fin. In the males the pectoral extends somewhat beyond the base of the ventral, whilst the females have it shorter. I have not observed, in any of the other species, this sexual difference so much developed, the males and females scarcely differing in this respect.

19. **Tetragonopterus petenensis.**

D. 11. A. 27. L. lat. 37. L. transv. 7/7.

The height of the body is one-third of the total length (without caudal), the length of the head one-fourth. Snout rather compressed; interorbital space slightly convex, its width being much more than the diameter of the eye, which is two-sevenths of the length of the head. The upper profile of the head is scarcely concave. The maxillary extends beyond the vertical from the front margin of the eye. The origin of the dorsal fin is in the vertical from the base of the inner ventral rays. The pectoral terminates at a short distance from the ventral. Sides of the body with a silvery band, which terminates in an oblong black spot, occupying the root and the middle of the caudal.

Lake Peten. Western Ecuador.

a–b. Four inches long. Lake Peten. From Mr. Salvin's Collection.
c. Four inches long. W. Ecuador. From Mr. Fraser's Collection.

20. **Tetragonopterus æneus.**

Günth. Proc. Zool. Soc. 1860, p. 319.

D. 11. A. 26. V. 8. L. lat. 35. L. transv. 7/6.

The height of the body is contained twice and a half or twice and three-fourths in the total length (without caudal), the length of the head four times. Snout rather compressed; interorbital space convex, its width being more than the diameter of the eye, which is contained thrice and one-third in the length of the head. The upper profile is slightly concave above the parietal region. The maxillary terminates in the vertical from the front margin of the eye. The dorsal fin commences behind the root of the ventrals; the pectoral extends to, or nearly to, the ventral. Body uniform deep-bronze-coloured; a brownish spot at the root of the caudal.

Mexico.

a–b. Types of the species. Oaxaca. Purchased of M. Salle.

21. **Tetragonopterus wappi.**

Cuv. & Val. xxii. p. 153.

D. 11. A. 28 (25, *Val.*). L. lat. 34. L. transv. 7/6.

The height of the body is contained thrice in the total length (without caudal), the length of the head thrice and two-thirds; interorbital space very convex, its width being much more than the diameter of the eye, which is one-fourth of the length of the head, and equals the distance between orbital edge and posterior margin of the præoperculum. The upper profile of the head is nearly straight. The maxillary extends to below the end of the first infraorbital bone, and terminates a little behind the front margin of the eye. Second infraorbital with radiating striæ. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral does not extend to the ventral. An ovate black spot on the shoulder, above the lateral line; another black spot on the root of the caudal, both spots being united by a black band.

British Guiana.

a. Adult. Presented by Sir R. Schomburgk.

22. Tetragonopterus peruvianus.

Tetragonopterus peruanus, *Müll. & Trosch. Hor. Ichth.* i. p. 28. taf. 8. fig. 1; *Cuv. & Val.* xxii. p. 153.

D. 11. A. 30. L. lat. 36. L. transv. 6/6.

The height of the body is one-third of the total length (without caudal), the length of the head two-sevenths. The width of the interorbital space is more than the diameter of the eye, which is one-fourth of the length of the head, and much more than the distance between orbital edge and posterior margin of the præoperculum. The upper profile of the head is not concave. The maxillary extends to below the end of the first infraorbital bone, and to behind the front margin of the eye. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral reaches to the ventral. A blackish longitudinal band above the lateral line, becoming darker posteriorly on the caudal fin. (*M. & T.*)

Peru.

23. Tetragonopterus humilis.

D. 11. A. 27–31. V. 8. L. lat. 36. L. transv. 7/7.

The height of the body is less than one-third of the total length (without caudal), the length of the head less than one-fourth. Interorbital space convex, its width being much more than the diameter of the eye, which is contained thrice and two-thirds in the length of the head. The upper profile of the head is straight. The maxillary terminates in the vertical from the front edge of the orbit. The origin of the dorsal is vertically behind the root of the ventrals. The pectoral reaches to, or a little beyond, the base of the ventrals. Humeral and caudal spots more or less distinct; sides silvery; anal and ventral with broad red margins.

Guatemala.

a–d. Adult ($4\frac{1}{2}$ inches long) and half-grown. Lake of Amatitlan. From Mr. Salvin's Collection.

24. Tetragonopterus oligolepis.

D. 11. A. 24. L. lat. 28. L. transv. $5/3\frac{1}{2}$.

The height of the body is two-fifths of the total length (without caudal), the length of the head one-fourth. Interorbital space convex; its width is more than the diameter of the eye, which is two-fifths of the length of the head. The upper profile of the head is straight; the maxillary extends to below the front margin of the eye. The origin of the dorsal fin is vertically behind the root of the ventrals. The pectoral extends somewhat beyond the base of the ventral. Humeral and caudal spots present.

British Guiana.

a. Four inches long. Presented by Sir R. Schomburgk.

** The origins of the dorsal and ventral fins are nearly in the same vertical.

25. Tetragonopterus chrysargyreus.

D. 11. A. 28. V. 8. L. lat. 34. L. transv. 7/7.

The height of the body is a little less than one-half of the total length (without caudal), the length of the head one-fourth; interorbital space convex, its width being scarcely more than the diameter of the eye, which is two-fifths of the length of the head. The upper profile is concave above the parietal region. The maxillary terminates below the front margin of the eye. The origin of the dorsal fin is vertically above the middle of the base of the ventral. Caudal fin scaly. The pectoral reaches beyond the root of the ventrals. Silvery, with golden reflexions; back steel-blue; a round blackish spot behind the shoulder, above the lateral line.

Essequibo.

a. Fine specimen, 4 inches long. From Mr. Ehrhardt's Collection.

26. Tetragonopterus grandisquamis.

Müll. & Trosch. Hor. Ichth. i. p. 27. taf. 8. fig. 2.

D. 11. A. 28. V. 9. L. lat. 30–33. L. transv. 5/5.

The height of the body is contained twice and one-sixth in the total length (without caudal), the length of the head thrice and two-thirds; interorbital space convex, its width being rather more than the diameter of the eye, which is two-fifths of the length of the head. The upper profile is scarcely concave above the eye. The maxillary extends nearly as far backwards as the first infraorbital bone, somewhat beyond the front margin of the eye. The origins of the dorsal and ventral fins are in the same vertical. The pectoral reaches to the base of the ventral fin. Caudal fin scaly. A silvery band along the body, above the lateral line.

Guianas.

a. Adult. British Guiana. Presented by Sir R. Schomburgk.

27. Tetragonopterus lepidurus.

Kner, Denkschr. Acad. Wiss. Wien, 1859, xvii. p. 176. taf. 8. fig. 20.

D. 10–11. A. 24–25. L. lat. 36. L. transv. $\frac{5-5\frac{1}{2}}{3\frac{1}{2}-4}$.

The height of the body is somewhat less than one-third of the total length (without caudal), the length of the head one-fourth; the width of the interorbital space is more than the diameter of the eye, which is contained twice and two-thirds in the length of the head. Upper profile of the head not concave. The maxillary terminates in the vertical from the front margin of the eye. The origin of the dorsal is nearly above that of the ventral. Pectoral not reaching to the ventral. Basal portion of the caudal fin scaly. Humeral and caudal spots present, united by a silvery band; the naked portion of the upper caudal lobe black. (*Kner.*)

Rio Guaporé.

28. **Tetragonopterus tæniatus.**

Jenyns, Zool. Beagle, Fish. p. 126; ? *Cuv. & Val.* xxii. p. 145.

D. 11. A. 25. L. lat. 40. L. transv. 7/6.

The height of the body is one-third of the total length (without caudal). The ventrals are in an exact line with the commencement of the dorsal. Humeral and caudal spots present, united by a silvery band. (*Jen.*)

Socego (province of Rio de Janeiro).

b. Cleft of the mouth rather wide; maxillary without teeth along its edge, long and narrow, extending to, or nearly to, below the centre of the eye. Dorsal fin above the ventral.

29. **Tetragonopterus melanurus.**

Salmo melanurus, *Bl.* taf. 381. fig. 2.
Tetragonopterus melanurus, *Müll. & Trosch. Hor. Ichth.* i. p. 14; *Cuv. & Val.* xxii. p. 155.

D. 11. A. 26–30. V. 8. L. lat. 45–46. L. transv. 7/4½.

The height of the body is contained thrice and a half or four times in the total length (without caudal), the length of the head four times and a half or four times and one-third. Interorbital space flat, its width being equal to the diameter of the eye, which is two-fifths of the length of the head. Upper profile straight above the occiput. Maxillary long and narrow, extending to, or nearly to, below the middle of the eye. The origin of the dorsal fin is vertically above that of the ventral; the pectoral extends to the base of the ventral. Uniform silvery; caudal fin black, with two large orange-coloured spots on its basal half.

Guiana.

a. Adult. British Guiana. Presented by Sir R. Schomburgk.
b–c. Adult. Essequibo River. From Mr. Ehrhardt's Collection.
d. Adult. From the Collection of the Zoological Society.

30. **Tetragonopterus affinis.**

D. 11. A. 27. V. 8. L. lat. 43. L. transv. 7/4½.

Very similar to *T. melanurus*, but with the head comparatively larger, its length being contained four times and one-fifth in the total (without caudal); the height of the body is contained thrice and one-fourth in its length. Interorbital space flat, its width being equal to the diameter of the eye, which is two-fifths of the length of the head. Upper profile straight above the occiput. Maxillary long and narrow, extending to below the middle of the eye. The origin of the dorsal is vertically somewhat behind that of the ventral; the pectoral extends to the base of the ventral. Uniform silvery; caudal fin black, with a pair of large red spots on its basal half.

British Guiana.

a. Three and a half inches long. Presented by Sir R. Schomburgk.

31. Tetragonopterus caudomaculatus.

D. 11. A. 26. L. lat. 42. L. transv. 6½/4.

Similar to *T. melanurus*.

The height of the body is two-sevenths of the total length (without caudal), the length of the head two-ninths. The interorbital space is flat, equal in width to the diameter of the eye, which is contained twice and two-thirds in the length of the head. Upper profile straight above the occiput. Maxillary long and narrow, not extending to below the middle of the eye. The origin of the dorsal fin is vertically above that of the ventral; the pectoral does not extend to the base of the ventral. Light brownish, shining silvery; caudal blackish, with a pair of large reddish spots on its basal half.

South America.

a. Four inches long. Presented by the Zoological Society.

c. Cleft of the mouth of moderate width; the entire edge of the maxillary denticulated: *Hemibrycon*.

32. Tetragonopterus polyodon.

D. 10. A. 27. V. 8. L. lat. 45. L. transv. 8/6.

The height of the body is two-sevenths of the total length (without caudal), the length of the head two-ninths; the upper profile from the snout to the dorsal is gently curved. Head compressed: interorbital space convex, its width being equal to the diameter of the eye, which is one-third of the length of the head; snout shorter than the eye, with the lower jaw prominent. The maxillary extends beyond the front margin of the orbit. The origin of the dorsal fin is midway between snout and root of the caudal, behind the ventral, so that its hinder portion is above the anterior anal rays. The pectoral extends beyond the base of the ventral. Silvery, the middle caudal rays black.

Guayaquil.

a. Three and a half inches long. From Mr. Fraser's Collection.

20. SCISSOR.

The dorsal fin is placed nearly in the middle of the length of the body, above the interspace between ventrals and anal; anal fin long. Body oblong, covered with scales of moderate size; lateral line continuous; belly rounded. Cleft of the mouth wide; intermaxillary and mandibulary teeth as in *Tetragonopterus*; maxillary bone toothed. Nostrils and gill-opening as in *Tetragonopterus*. Gill-rakers short, lanceolate.

South America.

This genus is closely allied to *Tetragonopterus*, but has a very different physiognomy, and the gill-rakers are not setiform, as in that genus.

1. Scissor macrocephalus.

B. 4. D. 11. A. 29. V. 8. L. lat. 38. L. transv. 7/6.

The height of the body is contained thrice and one-fourth in the total length (without caudal), the length of the head thrice and one-third; head two-thirds as high as long; nape of the neck abruptly elevated behind the occiput. Interorbital space somewhat convex, its width being equal to the diameter of the eye, which is less than one-fourth of the length of the head. Snout conical, longer than the eye, with the lower jaw prominent. The maxillary is long and narrow, slightly dilated posteriorly, extending to beyond the anterior margin of the eye. Teeth rather strong, pointed, indistinctly tricuspid: those of the outer series of the intermaxillary are smaller than those of the inner; mandibulary teeth strongest, the two middle ones widely apart, to receive a pair of the upper jaw between them; the upper half of the maxillary is armed with very small conical teeth. The origin of the dorsal fin is nearer to the base of the caudal than to the end of the snout, the fin occupying exactly the middle between ventral and anal; its height is two-thirds of the length of the head. Anal fin rather low. Caudal forked to its base, with the lobes equal, their length being two-thirds of the length of the head. The portion of the tail behind the anal is somewhat longer than deep. The pectoral extends a little beyond the root of the ventral; the ventral to the vent. Body uniformly coloured, shining silvery; a blackish band on the root of the caudal fin and along its middle rays.

a. Six inches long. Purchased of Mr. Frank.

This specimen was received without any information as to th locality whence it was obtained, but as all the specimens from the same source were from Surinam, it is probable that this species also comes from that country.

21. PSEUDOCHALCEUS.

Pseudochalceus, *Kner, in Sitzgsber. Acad. Wiss. Münch.* 1863, p. 225.

"Dentes intermaxillares biseriales, cuspidati, duo medii majores; maxillares simplices, acuti, uniseriales; dentes inframaxillares uniseriales, multicuspides, medio cuspide prælongo, recurvo; laterales vicini multo fortiores, posteriores autem minimi. Corpus compressum; abdomen subrotundatum. Basis pinnæ dorsalis inter ventrales et analem sita, brevis; analis longa. Squamæ magnæ; linea lateralis abrupta."

Western Andes of Ecuador.

1. Pseudochalceus lineatus.

Kner, l. c.

B. 4. D. 10–11. A. 25–26. P. 10–11. V. 8. L. lat. 36. L. transv. 10.

"Corpus octo vel novem striis longitudinalibus fusco-nigris lineatum, insuper ocello nigro retro operculum et ad pinnæ caudalis basin distinctum."

Western Andes of Ecuador.

22. CHIRODON.

Tetragonopterus, sp., *Jenyns.*
Cheirodon, *Girard, Proc. Acad. Nat. Sci. Philad.* vii. p. 199.

Dorsal fin placed in the middle of the length of the body, behind the ventrals; anal long or of moderate length. Body oblong, covered with scales of moderate size; lateral line not continued to the tail. Belly rounded before the ventrals. Cleft of the mouth narrow, maxillary short. A single series of small serrated teeth in the intermaxillary and mandibulary; maxillary teeth none. Nostrils as in *Tetragonopterus.*

Maldonado; Chile.

1. Chirodon interruptus.

Tetragonopterus interruptus, *Jenyns, Voy. Beagle, Fish.* p. 127. tab. 23. fig. 4.

D. 11. A. 19–20. V. 7. L. lat. 35. L. transv. 5/4.

The height of the body is two-fifths of the total length (without caudal), the length of the head one-fourth; upper profile of the head scarcely concave. The pectoral extends beyond the root of the ventral. Sides with a bright longitudinal band; a black spot at the base of the caudal. (*Jen.*)

Maldonado.

2. Chirodon pisciculus.

Girard, l. c., and *U. S. Nav. Astronom. Exped. Fishes*, p. 249. pl. 34. figs. 4–7.

D. 10. A. 14. V. 7. L. transv. 10 or 11.

The height of the body is less than one-third of the total length (without caudal), the length of the head one-fourth; upper profile of the head rather convex. The pectoral reaches nearly to the root of the ventral. Sides with a silvery longitudinal band, bordered with blackish above. (*Girard.*)

[illegible] (Chile).

23. CHALCEUS.

Chalceus, *Cuv. Mém. Mus.* iv. p. 454.

The dorsal fin is placed behind the middle of the length of the body, behind the ventrals; anal short. Body oblong, covered with large scales unequal in size. Belly rounded. Cleft of the mouth of moderate width. Maxillary teeth very small; intermaxillary and mandibulary teeth of moderate size, tricuspid, the former in a triple, the latter in a double series; the hinder series of the lower jaw is formed by a pair of conical median teeth and by small lateral teeth. Nostrils close together, separated by a valve only. Gill-opening wide, the gill-membranes being free from the isthmus and separate.

Guianas, Brazil.

1. Chalceus macrolepidotus.

Chalceus macrolepidotus, *Cuv. Mém. Mus.* iv. p. 454. pl. 21. fig. 1; *Cuv. & Val.* xxii. p. 240.
Brycon macrolepidotus, *Müll. & Trosch. Hor. Ichth.* i. p. 15.
Chalceus ararapeera, *Cuv. & Val.* xxii. p. 244.

D. 12. A. 12. V. 9. L. transv. 3/3.

The dorsal fin commences immediately behind the root of the ventral. Twenty-one transverse series of scales above, and thirty-five scales in the lateral line. Fins red.

Guianas, Brazil.

a. Fine specimen. Essequibo River. From Mr. Ehrhardt's Collection.
b–c. Adult. British Guiana. Presented by Sir R. Schomburgk.
d. Adult. River Cupai. Purchased of Mr. Stevens.

24. BRYCON*.

Brycon, sp., *Müll. & Trosch. Hor. Ichth.* i. p. 15.

Dorsal fin placed in the middle of the length of the body, behind the ventrals; anal long. Body oblong, covered with scales equal in size. Belly rounded in front of the ventrals, and compressed behind them. Cleft of the mouth rather wide. Intermaxillary with three series of notched or tricuspid teeth, the middle series being irregular; edge of the maxillary with small teeth; mandible with a series of strong tricuspid teeth, and with a pair of conical teeth in the middle behind the front series. Nostrils close together, separated by a valve only. Gill-openings wide, the gill-membranes being united for a short space in front, but not attached to the isthmus; gill-rakers slender, lanceolate.

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* 1. Brycon schomburgkii, *Müll. & Trosch. Hor. Ichth.* i. p. 29. taf. 6. fig. 2.—D. 11. A. 26. Scales of moderate size. The height of the body is nearly equal to the length of the head, and somewhat less than one-third of the total (without caudal). The lateral portion of the inner series of mandibulary teeth extends forwards to the front teeth. The origin of the dorsal fin is behind the root of the ventral, in the middle between the extremity of the snout and the root of the caudal. Lateral line distinct through its entire course. The pectoral extends to the ventral. Coloration uniform, without spots.—Essequibo River.
2. Chalceus orbignyanus, *Cuv. & Val.* xxii. p. 249; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 11.—Rio de la Plata, Rio Guaporé.
3. —— rodopterus, *Cuv. & Val.* xxii. p. 249.—Buenos Ayres.
4. —— devillei, *Casteln. Anim. Amér. Sud, Poiss.* p. 69. pl. 36. fig. 2.—Bahia.

South America, east of the Andes.

1. Brycon opalinus.

Chalceus opalinus, *Cuv. Mém. Mus.* v. p. 351. pl. 26. fig. 1; *Cuv. & Val.* xxii. p. 244.
? Characinus amazonicus, *Spix, Pisc. Bras.* tab. 35.
? Chalceus amazonicus, *Agass. in Spix, Pisc. Bras.* p. 68.

B. 4. D. 11. A. 28. V. 10. L. lat. 45.

Coloration uniform, without spots. (*C. & V.*)

Brazils.

According to the figure, the scales of *Chalceus amazonicus* are much smaller than those of *B. opalinus*, so that the identity of both fishes remains doubtful until the typical specimen of the former is reexamined.

2. Brycon nattereri.

Chalceus opalinus, *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 10 (not synon.).

D. 11. A. 23. L. lat. 50. L. transv. 8/4.

A large black spot at the base of the caudal fin. (*Kner.*)

Irisanga.

3. Brycon bahiensis.

D. 12. A. 25. V. 8. L. lat. 43. L. transv. 11/5½.

The height of the body is contained thrice and one-third in the total length (without caudal), the length of the head four times. Intermaxillary teeth in three series; the lateral portion of the inner series of the mandible extends forwards to the front teeth. The origin of the dorsal fin is behind the root of the ventral, and somewhat nearer to the base of the caudal than to the extremity of the snout. The pectoral does not extend to the ventral. Belly trenchant behind the ventral, rounded in front. The lateral line becomes distinct below the dorsal, being scarcely visible on the anterior part of the body. Greenish, shining silvery; humeral and caudal spots present, but indistinct.

Bahia.

a. Six inches long. From Dr. O. Wucherer's Collection.

4. Brycon falcatus.

Müll. & Trosch. Hor. Ichth. i. p. 29. tab. 6. fig. 1.

B. 4. D. 11. A. 27–29. V. 8. L. lat. 47–49. L. transv. 10/6. Vert. 21/20.

The height of the body is contained twice and two-thirds or twice and four-fifths in the total length (without caudal), the length of the head four times or four times and one-fourth. An indistinct humeral spot; each caudal lobe with a broad black longitudinal band, the bands confluent on the root of the fin; a blackish band along the base of the anal.

British Guiana.

a–c. Three of the typical specimens. British Guiana. Presented by Sir R. Schomburgk.

d–e. Fine specimens. Essequibo River. Purchased of Mr. Ehrhardt.

f. Adult: skeleton. Surinam.

5. **Brycon orthotænia.**

D. 11. A. 29. V. 8. L. lat. 53. L. transv. 10/7.

The height of the body is contained thrice and one-third in the total length (without caudal), the length of the head nearly five times. Intermaxillary teeth in three series; lower jaw without inner lateral series of teeth. The origin of the dorsal fin is behind the root of the ventral, and a little nearer to the base of the caudal than to the extremity of the snout. The pectoral does not extend to the ventral. Lateral line uninterrupted, the muciferous tubes of each scale being much ramified. The free portion of the tail, behind the adipose fin, is rather higher than long. Greenish, shining silvery; a straight, broad, deep-black band runs along the middle of the free portion of the tail and along the middle caudal rays. Caudal fin only slightly emarginate.

Brazil.

a. Skin, 16 inches long. River Cipo. Presented by Ch. Cumberland, Esq.—Vernacular name: Matrinxim.

6. **Brycon brevicauda.**

D. 11. A. 26–27. V. 8. L. lat. 55. L. transv. 11/7.

The height of the body is contained twice and three-fourths or twice and four-fifths in the total length (without caudal), the length of the head thrice and three-fourths. Intermaxillary teeth in three rather irregular series; the lateral portion of the inner series of the mandible terminates anteriorly close to the median teeth. The origins of the dorsal and ventral fins are in the same vertical line, equally distant from the extremity of the snout and from the root of the caudal. The pectoral does not extend to the ventral. Belly compressed, but not trenchant. Silvery, with a shining line along each series of scales; an indistinct humeral spot; each caudal lobe with a broad black longitudinal band, the bands confluent on the root of the fin; anal blackish, with a light band along its middle.

a. Adult: skin, 11 inches long. Rio Jocintins. Purchased of Mr. Gardiner.

b–c. Half-grown, 4½ inches long. River Capin. Purchased of Mr. Stevens.

7. **Brycon atricaudatus.**

Chalceus atricaudatus, *Kner, Sitzgsber. Acad. Wiss. Münch.* 1863, p. 227.

D. 11. A. 29. L. lat. 54–55. L. transv. 10/5.

The length of the head equals the height of the body, and is one-fourth of the total length (with the caudal). End of the tail with a broad blackish band*. (*Kner.*)

Western Andes of Ecuador.

8. **Brycon carpophagus.**

Chalceus carpophaga, *Cuv. & Val.* xxii. p. 252; *Casteln. Anim. Amér. Sud, Poiss.* p. 68. pl. 34. fig. 3; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 12.

D. 11. A. 25. V. 9. L. lat. 61–63. L. transv. 12/7.

The height of the body is one-third of the total length (without caudal); caudal fin scarcely emarginate. Coloration uniform.

Guiana, Brazil.

9. **Brycon hilarii.**

Chalceus hilarii, *Cuv. & Val.* xxii. p. 246; *Casteln. Anim. Amér. Sud, Poiss.* p. 68. pl. 36. fig. 1†; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 10.

D. 11. A. 26–28. V. 10. L. lat. 76–80. L. transv. $\frac{16-17}{7-8}$.

A large black spot on the base of the caudal fin, extending over its lobes. Caudal scarcely emarginate.

Brazil.

10. **Brycon pesu.**

Brycon pesu, *Müll. & Trosch. Hor. Ichth.* i. p. 30. taf. 7. fig. 1.

D. 11. A. 22. V. 8. L. lat. 41.

The height of the body is contained thrice and one-third in the total length (without caudal), the length of the head four times. Snout pointed, as long as the eye, with the upper jaw projecting beyond the lower. The origin of the dorsal fin is behind the root of the ventral, a little nearer to the caudal than to the extremity of the snout. The pectoral reaches the ventral. A black humeral spot. (*M. & T.*)

Guiana.

25. **CHALCINOPSIS.**

Chalcinopsis, *Kner, in Sitzgsber. Acad. Wiss. Münch.* 1863, p. 226.

Dorsal fin placed somewhat behind the middle of the length of the body, behind the ventrals; anal long. Body oblong, covered with scales of moderate size; lateral line complete. Belly compressed in front of the ventrals, trenchant behind them. Cleft of the mouth rather wide. Intermaxillary with three or four rather irregular series of teeth, which are notched or tricuspid; edge of the maxillary with small teeth; mandible with a series of strong tricuspid teeth, and with a pair of conical teeth in the middle behind the front series. Nostrils close together, separated by a valve only. Gill-openings wide, the gill-membranes being not attached to the isthmus, separate; gill-rakers slender, lanceolate.

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* Although the author in the diagnosis uses the word *fascia*, which signifies a *cross-band*, it is probable that this species is marked with a *longitudinal* caudal band, like others of its congeners.

† If this figure really represents *Chalceus hilarii*, C. & V., it is very incorrect.

Central America; Ecuador.

* Intermaxillary teeth in four series.

1. Chalcinopsis dentex.

Brycon dentex, *Günth. Proc. Zool. Soc.* 1860, p. 240.

D. 11. A. 35–36. L. lat. 48–55. L. transv. $\frac{9-10}{7-8}$. Vert. 23/22.

The height of the body is contained thrice and one-fourth or thrice and one-third in the total length (without caudal), the length of the head four times and one-third or four times and two-thirds. The maxillary does not quite extend to below the centre of the eye. Snout as long as the eye in young examples, but much longer in adult ones. Interorbital space convex, its width being much more than the diameter of the eye in old specimens. The origin of the dorsal fin is nearer to the root of the caudal than to the extremity of the snout; its hinder rays are vertically above the anterior anal rays. The free portion of the tail is considerably longer than high. Caudal deeply forked. The pectoral extends to, or nearly to, or a little beyond, the ventral. Silvery, sometimes with a reddish hue; some of the scales have occasionally a black margin, or are spotted with black; humeral part of the gill-opening black; sometimes a black spot at the root of the caudal. Anal fin generally with a black margin.

Guatemala, Ecuador.

a–d. Adult, half-grown, and young. Esmeraldas. From Mr. Fraser's Collection.—Types of the species.
e–g. Adult: 16 inches long. Rio Motagua. From the Collection of Messrs. Godman and Salvin.
h. Adult. Rio Usumacinta. From the Collection of Messrs. Godman and Salvin.
i. Young. Yzabal. From the Collection of Messrs. Godman and Salvin.
k. Adult male: skeleton. Rio Motagua. From the Collection of Messrs. Godman and Salvin.

2. Chalcinopsis striatulus.

Kner, Sitzgsber. Acad. Wiss. Münch. 1863, p. 226.

D. 10–11. A. 36. L. lat. 73–74. L. transv. 13/8.

The length of the head is one-fifth of the total length (with the caudal); twenty intermaxillary teeth in the outer series, eighteen in the second. Sides of the body with rows of oblique brownish-black spots; frequently a blackish blotch at the base of the caudal fin. (*Kner.*)

Panama.

3. Chalcinopsis chagrensis.

Kner, Sitzgsber. Acad. Wiss. Münch. 1863, p. 226.

D. 11. A. 36–37. L. lat. 77–80. L. transv. $\frac{13\text{–}14}{9}$.

The length of the head is contained five times and a half or five times and three-fourths in the total (with the caudal). Sixteen or eighteen intermaxillary teeth in the outer series, fourteen in the second. Sides of the body immaculate. (*Kner.*)

Rio Chagres.

** Intermaxillary teeth in three series.

4. Chalcinopsis alburnus.

Chalceus alburnus, *Günth. Proc. Zool. Soc.* 1859, p. 419.

D. 11. A. 35. V. 8. L. lat. 60. L. transv. 13/5.

The height of the body is equal to, or somewhat less than, the length of the head, and contained thrice and three-fourths in the total (without caudal). The maxillary extends nearly to below the centre of the eye; snout produced, considerably longer than the eye; the third mandibulary tooth is the strongest. The width of the interorbital space is a little more than the diameter of the eye. The origin of the dorsal fin is midway between the occiput and the root of the caudal fin; its hinder rays are vertically above the anterior anal rays. The free portion of the tail is as long as high; caudal fin deeply forked; the pectoral extends somewhat beyond the base of the ventral. Silvery, with a blackish spot on the origin of the lateral line, and with another on its end; sometimes blackish vertical lines all along the side.

Western Andes of Ecuador.

a–e. Types of the species. From Mr. Fraser's Collection.

26. BRYCONOPS.

Bryconops, *Kner, Denkschr. Acad. Wiss. Wien,* 1859, xvii. p. 179.

Dorsal fin placed in the middle of the length of the body; anal long; ventrals below the anterior dorsal rays. Belly rounded. Cleft of the mouth of moderate width; teeth denticulated, in a treble series in the intermaxillary, and in a single in the mandible; maxillary and palate without teeth; no conical teeth behind the front mandibulary teeth. Nostrils close together; gill-openings wide.

Brazil.

1. Bryconops alburnus.

Bryconops alburnoides (!), *Kner, l. c.*
—— alburnus, *Kner,* taf. 9. fig. 22.

D. 11. A. 32–33. V. 9. L. lat. 55–60. L. transv. 9/4.

The height of the body is somewhat more than the length of the head, and two-ninths of the total (without caudal). Sides with a bright, shining silvery longitudinal band; middle and margin of the caudal fin black. (*Kner.*)

Rio Guaporé.

2. Bryconops lucidus.

Kner, l. c. p. 181. fig. 23.

D. 10. A. 38. V. 9. L. lat. 62. L. transv. 9/4.

The height of the body is one-fourth of the total length (without caudal), the length of the head one-fifth. Sides with a silvery longitudinal band. Only the upper caudal lobe has a dark margin. (*Kner.*)

Rio Branco.

27. CREAGRUTUS.

Dorsal fin placed in the middle of the length of the body, immediately behind the ventrals; anal of moderate length. Body oblong, compressed, covered with scales of moderate size. Lateral line distinct. Belly rounded. Cleft of the mouth of moderate width; teeth more or less compressed and notched, in three series in the upper jaw, and in a single in the lower; maxillary with a few blunt teeth; palate toothless. Nostrils close together. Gill-openings wide, the gill-membranes not being attached to the isthmus; gill-rakers short, lanceolate.

1. Creagrutus mulleri.

Leporinus müelleri, *Günth. Proc. Zool. Soc.* 1859, p. 92.

B. 4. D. 11. A. 14. V. 8. L. lat. 39. L. transv. 5/3. Vert. $\frac{18}{21}$.

This fish has externally the appearance of a *Leuciscus*. The height of its body is contained thrice and one-third in the total length, the caudal fin not included; the length of the head four times. The snout is rather short and obtusely convex, not longer than the diameter of the eye, which is one-fourth of the length of the head. Interorbital space entirely osseous, rather convex, its width being more than the diameter of the eye; the lower infraorbital is much dilated, as wide as the eye, and touches the lower præopercular limb, but not the angle. The front series of intermaxillary teeth is composed of three pairs of small subconical teeth, the second series of two pairs, and the hinder series of four pairs; the latter are the largest, and provided with two or three points. Mandible with three pairs of strong front teeth, and with some small ones on the sides.

The dorsal fin commences a little nearer to the snout than to the root of the caudal fin, above or immediately behind the root of the inner ventral ray. Caudal fin distinctly emarginate. Anal commencing behind the dorsal. Pectoral as long as the head without snout, extending to the ventral. Ventral shorter than pectoral, reaching to the vent. Back brownish. Sides and belly silvery. A more or less distinct blackish band runs from a black humeral spot to the middle of the root of the caudal fin.

Andes of Western Ecuador.

a–d. Adult (46 lines long) and half-grown. From Mr. Fraser's Collection.

28. CHALCINUS.

Chalceus, *Müll. & Trosch. Hor. Ichthyol.* i. p. 15 (not *Cuv.*)
Chalcinus, *Cuv. & Val.* xxii. p. 258.

Dorsal fin placed behind the middle of the length of the body, behind the ventrals; anal and pectoral long. Body oblong, covered with scales of moderate size; belly in front and behind the ventrals trenchant. Cleft of the mouth of moderate width; teeth in both jaws multicuspid; those of the intermaxillary in two series; maxillary with only a few rudimentary teeth near its articulation; mandible with a complete series of multicuspid teeth in front, and with small conical ones on the side; a pair of conical teeth in the middle behind the front series. Gill-opening very wide, the gill-membranes being separate; gill-rakers setiform. Intestinal canal with a single circumvolution.

Brazil, Guianas.

1. Chalcinus nematurus.

? Chalceus angulatus, *Spix, Pisc. Bras.* p. 67. tab. 34.
Chalcinus nematurus, *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 13. taf. 1. fig. 1 (not synon.).

D. 11. A. 32–34. V. 6. L. lat. 34–36. L. transv. $\frac{6}{2\text{–}2\frac{1}{2}}$.

The height of the body is one-third of the total length (without caudal), the length of the head two-ninths; operculum twice as high as long*, reaching the vertical from the axil of the pectoral; the scales in the thoracic region are the largest. The distance of the origin of the dorsal fin from the root of the caudal is contained once and one-third in its distance from the extremity of the snout. Pectoral one-half longer than the head. The middle caudal rays are somewhat produced (in mature specimens). Silvery, iridescent; an irregular blackish blotch on the temple. (*Kner.*)

Brazil.

Kner thinks that this species may be identical with *Ch. müllerii*, Fil., or *Ch. trifurcatus*, Casteln., both these authors having distinguished their species by the produced middle caudal rays; but that character, being dependent on age, and absent in young individuals, cannot prove either the identity or distinctness of two species. Kner's fish is distinguished by the increased number of anal rays, in which it agrees with no other species, except with *Ch. angulatus*, Spix. Indeed, it is probable that both are identical, in spite of the differences which become apparent on comparison of the two figures quoted; for it is evident that the figure given in Spix's work, and taken from an immature example, is incorrect in several respects, representing the lateral line in the upper part of the body, the scales of the thoracic region small, &c. The lateral line of the Chalcines is sometimes indistinct, so that it is difficult to point out its true course.

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* According to the description; it is represented lower in the figure.

2. Chalcinus brachypomus.

? Chalceus rotundatus, *Schomb. Fish. Guian.* i. p. 209.
Chalcinus brachipomus, *Cuv. & Val.* xxii. p. 259.
—— trifurcatus, *Casteln. Anim. Amér. Sud, Poiss.* p. 70. pl. 37. fig. 1.
—— müllerii, *De Fil. Rev. et Mag. Zool.* 1853, p. 164.

D. 11. A. 28. V. 7. L. lat. 34. L. transv. $\frac{5\frac{1}{2}}{3}$. Vert. 18/20.

The height of the body is contained thrice in the total length (without caudal), the length of the head four times and one-third; operculum twice as high as long, reaching nearly to the vertical from the axil of the pectoral. The scales above the lateral line and in the thoracic region are much larger than the others. The distance of the origin of the dorsal fin from the root of the caudal is contained once and two-thirds in its distance from the extremity of the snout. Pectoral one-third longer than the head. The middle caudal rays are somewhat produced beyond the margin of the fin in mature individuals. Silvery, iridescent: caudal and pectoral fins blackish behind.

Young specimens have the body somewhat less elevated, and the pectoral extending nearly to the vent.

Guianas, Brazil.

a–b. Adult and young. Essequibo. Purchased of Mr. Ehrhardt.
c. Adult: skeleton. Essequibo. Purchased of Mr. Ehrhardt.

3. Chalcinus auritus.

Cuv. & Val. xxii. p. 262; *Casteln. Anim. Amér. Sud, Poiss.* p. 69. pl. 36. fig. 3.

D. 11. A. 26. V. 7. L. lat. 44.

The height of the body is two-ninths of the total length (with the caudal), the length of the head one-fifth. The operculum extends backwards to the vertical from the axil. Pectoral reaching to the middle of the ventral (in a specimen 10 inches long). (*Val.*)

Rio Araguay.

4. Chalcinus elongatus.

D. 11. A. 28. V. 8. L. lat. 45*. L. transv. $\frac{6\frac{1}{2}}{3}$.

The height of the body is one-fourth of the total length (without caudal), the length of the head one-fifth; interorbital space very convex, its width being scarcely more than the diameter of the orbit, which is contained thrice and one-third in the length of the head. The maxillary extends to the vertical from the front margin of the orbit; adipose eyelids well developed. The third (largest) infraorbital is nearly thrice as long as broad, its width being not much more than one-half of the diameter of the eye. Operculum two-thirds as long as high, not extending to the vertical from the axil. The scales in the thoracic region are much larger than those on the sides, nearly thrice as high as long. The distance of the origin of the dorsal fin from the root of the caudal is contained once and two-thirds in its distance from the extremity of the snout. The anal commences immediately behind the last dorsal ray. Caudal forked, with the middle rays produced into a lobe. The length of the head is contained once and two-thirds in that of the pectoral fin, which extends nearly to the extremity of the ventral fin. Uniform silvery.

Hab. ——?

a. Ten inches long. From the Collection of the Zoological Society.

29. GASTROPELECUS.

Gasteropelecus, *Gronov. Mus. Ichth.* ii. p. 7.

Dorsal fin placed behind the middle of the length of the body, above the anal; anal long; pectoral long; ventrals very small, or rudimentary. Body strongly compressed, with the thoracic region dilated into a subsemicircular disk. Scales of moderate size. Lateral line descending obliquely backwards towards the origin of the anal fin. The lower profile compressed into an acute ridge. Cleft of the mouth of moderate width; teeth compressed, tricuspid, in one or two series in the intermaxillary, and in a single in the mandible; maxillary with a few minute conical teeth; palate toothless. Nostrils close together. Gill-openings very wide, the gill-membranes not attached to the isthmus; gill-rakers slender, lanceolate.

Brazil; Surinam.

1. Gastropelecus sternicla.

Gasteropelecus, *Gronov. Mus. Ichth.* ii. p. 7. no. 255. tab. 7. fig. 5.

Clupea sternicla, *L. Syst. Nat.* ed. 10. i. p. 319; *Koelreuter, Comment. Nov. Petrop.* 1761, viii. p. 405. tab. 14. figs. 1–3.

Gasteropelecus sternicla, *Pall. Spic. Zool.* fasc. 8. p. 50. tab. 3. fig. 4 *Cuv. & Val.* xxii. p. 169. pl. 640; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 16; *Gronov. Syst. ed. Gray,* p. 171.

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* The scales have been counted in the series commencing from the upper end of the gill-opening.

Salmo gastropelecus, *L. Gm.* i. p. 1384; *Bloch*, taf. 97. fig. 3; *Bl. Schn.* p. 418.

D. 10 A. 33–35. P. 11. V. 6. L. lat. 30–35.

A blackish band on each side of the tail.

Surinam; Brazil.

a. Skin: type of the species. From Gronow's Collection.—This specimen is not well preserved, and therefore we are not certain whether it is really identical with the species examined by Valenciennes. It has only 28 anal rays, but some of them may have been lost during the original process of preservation.

b. Fine specimen. Essequibo. From Mr. Ehrhardt's Collection.

2. Gastropelecus stellatus.

? Gastropelecus securis, *Filippi, in Guér. Rev. et Mag. Zool.* 1853, p. 165.
Gastropelecus stellatus, *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 17. taf. 1. fig. 2.

D. 13–14. A. 38–40. L. lat. 20.

Uniform silvery, without band along the side of the tail. (*Kner.*)

Rio Cujaba.

3. Gastropelecus strigatus.

D. 9. A. 27. L. lat. 25.

Thorax with four blackish bands radiating from the middle of its convex edge; a blackish band along the base of the anal fin.

The characters given will be sufficient to distinguish this species from its congeners, but the state of the specimens is such as to prevent me from giving a more detailed description.

Hab. —— ?

a–b. One and a half inch long. Old Collection.

30. PIABUCA.

Piabuca, sp., *Cuv. Règne Anim.*
Piabuca, *Müll. & Trosch. Hor. Ichth.* i. p. 9.

Dorsal fin placed rather behind the middle of the length of the body, behind the ventrals; anal long, commencing below the dorsal. Body elongate, covered with scales of moderate or of small size. Belly compressed. Cleft of the mouth narrow; intermaxillary and mandible with a single series of fixed, flat, serrated incisors; palate toothless. Gill-membranes united below the throat, not attached to the isthmus. Intestinal tract with a single circumvolution.

Brazils; Surinam.

1. Piabuca argentina.

Piabuca, *Marcgr.* p. 170
Trutta dentata, *Koelreuter, Nov. Comm. Petrop.* 1761, viii. p. 413. tab. 14. fig. 4.
Salmo argentinus, *L. Syst. Nat.* i. p. 511; *Bloch*, taf. 382. fig. 1; *Bl. Schn.* p. 403.

Characinus argentinus, *Lacép.* v. p. 272.
Piabuca argentina, *Cuv. Règne Anim.*; *Müll. & Trosch. Hor. Ichth.* i. p. 9. taf. 1. fig. 1; *Cuv. & Val.* xxii. p. 108.

B. 4. D. 11. A. 46. V. 8. L. lat. 82.

The length of the head is equal to, or less than, the height of the body, which is one-fifth or one-sixth of the total length (with the caudal). A silvery band along the side, above the lateral line; a black spot at the base of the caudal fin.

Brazil; Surinam.

2. Piabuca spilurus.

D. 10. A. 32. V. 8. L. lat. 57.

The height of the body is one-sixth of the total length (without caudal), the length of the head one-fifth. Fourteen crenulated teeth in the upper jaw as well as in the lower. The origin of the dorsal fin is midway between the occiput and the root of the caudal, and somewhat in front of that of the anal. Silvery iridescent; caudal with a large rounded deep-black spot on its basal portion.

Amazons.

a. Two and a half inches long. River Cupai. Purchased of Mr. Stevens.

31. AGONIATES.

Agoniates, *Müll. & Trosch. Hor. Ichth.* i. p. 33.

Dorsal fin placed behind the middle of the length of the body, behind the ventrals; anal rather long. Body oblong, covered with scales of moderate size; belly strongly compressed. Cleft of the mouth very wide. Intermaxillary with a double series of teeth: the outer ones conical, the inner tricuspid; maxillary long, with a single series of conical teeth of equal length; mandible with strong teeth in a single series, some of which are canine teeth; a large canine tooth on each side anteriorly, received in a groove on the palate; there are a few tricuspid teeth between the anterior canine teeth; no palatine teeth. Gill-openings wide; the gill-rakers of the first branchial arch setiform.

British Guiana.

1. Agoniates halecinus.

Müll. & Trosch. l. c. tab. 7. fig. 2; *Cuv. & Val.* xxii. p. 347.

B. 4. D. 11. A. 20. V. 7. L. lat. 39.

The height of the body is somewhat less than the length of the head, which is contained four times and two-thirds in the total (without caudal). The last dorsal rays are above the origin of the anal fin. Silvery. (*M. & T.*)

British Guiana.

Sixth Group. HYDROCYONINA.

Characinidæ with an adipose fin and a short dorsal, with the teeth in both jaws well developed and conical, with the gill-membranes free from the isthmus, and with the nasal openings close together.

South America and tropical Africa.

32. ANACYRTUS*.

Epicyrtus †, *Müll. & Trosch. Hor. Ichth.* i. p. 17.
Epicyrtus et Cynopotamus, *Cuv. & Val.*

Dorsal fin placed nearly in the middle ot the length of the body, behind the ventrals; anal long, commencing before or below the dorsal fin. Body oblong or rather elevated, covered with small scales; lateral line complete. Belly rounded in front of the ventrals, which are rather close to the pectorals; humerus dilated or produced into a process before the pectorals. Cleft of the mouth wide. Teeth conical, in the intermaxillary, maxillary, and mandible; canine teeth more or less distinct. The intermaxillary and mandibulary teeth form a single or double series; palate toothless. Nostrils close together, separated by a membrane only. Gill-openings wide, the gill-membranes not attached to the isthmus, separate; gill-rakers slender, lanceolate.

Central and South America.

The species may be divided into the following groups:—

A. Mandibulary teeth in a single series.
  1. Jaws without external tooth-like processes.
    a. Intermaxillary teeth in two nearly confluent series: *Anacyrtus*, m., p. 346.
    b. Intermaxillary teeth in a single series; scales very small: *Rœstes*, m., p. 347.
  2. Jaws with external tooth-like processes; scales very small: *Rœboides*, m., p. 347.
B. Mandibulary teeth in a double series: *Cynopotamus*, Kner, p. 348.

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* Reinhardt has described another species with the name of *Epicyrtus xenodon*, which also has the jaws provided with external tooth-like processes. Unfortunately I have not access, at present, to the part of the "Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjöbenhavn, 1849," which contains the description of this species.

† Preoccupied.

A. Mandibulary teeth in a single series.

1. Jaws without external tooth-like processes.

a. Intermaxillary teeth in two almost confluent series: *Anacyrtus.*

1. Anacyrtus gibbosus.

Charax, sp., *Gronov. Mus. Ichth.* i. p. 19. no. 53. tab. 1. fig. 4; *Zoophyl.* p. 124. no. 380.
Salmo gibbosus, *L. Syst. Nat.* i. p. 513; *Bl. Schn.* p. 419.
Epicyrtus gibbosus, *Müll. & Trosch. Hor. Ichth.* i. p. 17. taf. 2. fig. 1 (dentition).
Cynopotamus gibbosus, *Cuv. & Val.* xxii. p. 321. pl. 645.
Epicyrtus macrolepis, *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 47. taf. 6. fig. 14 *.

D. 11. A. 53–57. V. 8. L. lat. 57–58.

Teeth in the intermaxillary in a double series, the two series being so close together as to be almost confluent into one; no external divergent teeth; mandibulary teeth in a single series. Back elevated, the upper profile of the head and nape forming an S-shaped curve. The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head four times and one-fourth; the origin of the dorsal fin is above the fourth anal ray, the root of the ventral before the middle of the pectoral.

Guianas.

a. Adult: skin. Type of the species. From Gronow's Collection.
b. Adult. Surinam. Purchased of Mr. Frank.
c–e. Adult and half-grown. British Guiana. Presented by Sir R. Schomburgk.

2. Anacyrtus pauciradiatus.

Similar to *A. gibbosus,* but with fewer anal rays.

D. 11. A. 45–49. V. 8. L. lat. 56.

No external divergent teeth; teeth in the intermaxillary in a double series, the outer series, however, containing only a few teeth, which are almost confluent with the inner series; mandibulary teeth in a single series; canine teeth well developed. Back elevated, the upper profile of the head and nape forming an S-shaped curve. The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head thrice and four-fifths. Maxillary straight; the width of the interorbital space equals the diameter of the eye, which is two-sevenths of the length of the head. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal fin, above the second anal ray; the root of the ventral corresponds to the middle of the pectoral fin. Silvery, with a humeral and caudal spot.

Para.

a–b. From 4 to 5 inches long. River Capin. Purchased of Mr. Stevens.

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* Although Kner himself identifies his specimens with the species described by Gronow, they may possibly belong to *A. pauciradiatus,* as Kner has omitted to state the number of anal rays.

b. Intermaxillary teeth in a single series; scales very small: *Ræstes.*

3. Anacyrtus molossus.

Cynopotamus molossus, *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii p. 51. taf. 7. fig. 16.

D. 10. A. 46–50. V. 8.

Intermaxillary and maxillary with a single series of teeth, the former with canines; teeth of the mandible in a double series, the outer one containing canine teeth, those of the inner being small, equal in size. The height of the body is one-third of the total length (without caudal), the length of the head one-fourth. The upper profile of the head is very slightly concave; head broad, its width being nearly one-half of its length. Humerus broad, with a notch for the first pectoral ray. The dorsal fin commences midway between the extremity of the snout and the root of the caudal. Pectoral extending nearly to the vent. (*Kner.*)

Brazil.

2. Jaws with external tooth-like processes; scales very small: *Ræboides.*

4. Anacyrtus microlepis.

Epicyrtus gibbosus, *Cuv. & Val.* xxii. p. 43 (not *L.*).

—— microlepis, *Reinh. Vidensk. Meddel. Naturh. Foren. Kjöbenh.* 1849, p. ; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 47. taf. 6. fig. 13.

D. 11. A. 60. L. lat. 110.

Upper and lower jaw with short, conical, tooth-like processes directed outwards; teeth in the intermaxillary in two rather irregular series, without canines; maxillary with a few small teeth near its articulation; mandibulary teeth in a single series, with very small canines. Back elevated, the upper profile of the head being concave. The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head four times. Humeral and caudal spots present.

Brazil.

5. Anacyrtus guatemalensis.

D. 11. A. 51. V. 8. L. lat. 80. L. transv. 19/22. Vert. 12/22.

Upper and lower jaw anteriorly on each side with a short, conical, tooth-like process directed forwards; teeth in the intermaxillary, maxillary, and mandible in a single, rather irregular series; no canine teeth in the upper jaw, those in the lower small and short. Back elevated, the upper profile of the head and nape forming an S-shaped curve. The height of the body is contained twice and three-fourths in the total length (without caudal), the length of the head four times. The lower jaw is rather shorter than the upper; the maxillary extends nearly to the vertical from the centre of the eye. The width of the interorbital space is a little less than the diameter of the eye, which is two-sevenths of the length of the head. The humeral process in front of the pectoral terminates in a point anteriorly and posteriorly.

The origin of the dorsal fin is a little nearer to the extremity of the snout than to the root of the caudal, above the fifth or sixth anal ray; caudal deeply forked; the ventral is inserted below the middle of the pectoral, which extends nearly to the origin of the anal. Light reddish olive with a silvery lateral band.

Guatemala.

a–b. From 5 to 6 inches long. Chagres River. From the Collection of Messrs. Salvin and Dow.
c. Several young specimens. Huamuchal. From Mr. Salvin's Collection.
d. Adult: skeleton. Chagres River. From the Collection of Messrs. Salvin and Dow.

The length of the abdominal portion of the vertebral column is contained once and four-fifths in that of the caudal; the first vertebra is large, evidently composed of two confluent vertebræ. Ribs well developed. The interhæmal spines do not correspond with the hæmals, the nine anterior interhæmals being attached to the hæmal of the first caudal vertebra.

B. Mandibulary teeth in a double series: *Cynopotamus.*

6. Anacyrtus argenteus.

Hydrocyon argenteus, *Val. in d'Orb. Voy. Am. Mérid. Poiss.* pl. 9. fig. 1.
Cynopotamus argenteus, *Cuv. & Val.* xxii. p. 317.

D. 12. A. 53. V. 8. L. lat. 120.

Intermaxillary and mandibulary teeth in a double series: the outer series of the intermaxillary is formed by very short conical teeth, the inner by four canine teeth. Edge of the maxillary toothed. The outer series of the mandible contains strong canines, the inner being formed by very small teeth. Back elevated, the upper profile of the head and nape forming an S-shaped curve. The height of the body is one-third of the total length (without caudal), the length of the head a little less than one-fourth. (*Val.*)

Rio de la Plata

7. Anacyrtus humeralis.

Hydrocyon humeralis, *Val. in d'Orb. Voy. Am. Mérid. Poiss.* pl. 11. fig. 2.
Cynopotamus humeralis, *Cuv. & Val.* xxii. p. 320.

D. 11. A. 44. L. lat. 115.

Dentition as in *A. argenteus.* Body oblong, its height being equal to the length of the head, and two-sevenths of the total (without caudal). The upper profile of the head is somewhat concave. A more or less distinct blackish spot on the shoulder; a blackish band along the root of the caudal and along its middle rays. (*Val.*)

Buenos Ayres.

Kner (Denkschr. Acad. Wiss. Wien, 1860, xviii. p. 49. taf. 7. fig. 15) describes a *Cynopotamus humeralis*, which, however, appears to be distinct, having only 78–95 scales in the lateral line and 45–48 anal rays.

33. HYSTRICODON.

Exodon*, *Müll. & Trosch. Hor. Ichth.* i. p. 31.

Dorsal fin placed in the middle of the length of the body, above the ventrals; anal rather elongate, commencing behind the dorsal fin. Body oblong, covered with scales of moderate size; lateral line complete. Belly rounded. Cleft of the mouth rather wide; teeth conical, in a double series in the intermaxillary, maxillary, and mandible; those of the outer series largest, irregular, divergent; palate toothless. Nostrils close together. Gill-openings wide.

Guianas, Brazil.

1. Hystricodon paradoxus.

Exodon paradoxus, *Müll. & Trosch. l. c.* taf. 4. fig. 1; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 46.
Epicyrtus exodon, *Cuv. & Val.* xxii. p. 46.
—— paradoxus, *Casteln. Anim. Amér. Sud, Poiss.* p. 60.

B. 4. D. 10–11. A. 20–22. V. 8–9. L. lat. 37.

The height of the body is rather more than the length of the head, and one-third of the total (without caudal). Intermaxillary with a pair of short conical teeth in front, pointing forwards; caudal fin deeply forked. Body with a silvery band above the lateral line, and with two large blackish spots, one on the side of the trunk, and the other at the root of the caudal fin.

Brazil, Guiana.

34. SALMINUS.

Salminus, *Müll. & Trosch.*† *Hor. Ichth.* i. p. 16.

Dorsal fin placed in the middle of the length of the body, behind the ventrals; anal long. Body oblong, covered with scales of moderate size; belly rounded. Cleft of the mouth wide, maxillary elongate. Teeth conical: intermaxillary and mandible with a double series, the teeth in the outer series being much larger than those in the inner; maxillary toothed along its entire length. Nostrils close together. Gill-opening very wide, the gill-membranes being free and separate.

Brazils.

1. Salminus hilarii.

Cuv. & Val. xxii. p. 64; *Casteln. Anim. Amér. Sud, Poiss.* p. 60. pl. 31. fig. 1.

D. 11. A. 25. V. 8. L. lat. 69. L. transv. 10/8.

The length of the head is nearly equal to the height of the body, and somewhat more than one-fourth of the total (without caudal); maxillary with about 37 teeth; operculum two-fifths as long as high. The origin of the dorsal fin is a little nearer to the root of the caudal than to the extremity of the snout. Caudal fin with the middle rays produced into a short lobe. Each scale with a brownish dot at the base; a broad black band along the middle of the caudal fin.

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* Preoccupied.

† This genus was first characterized by Müller and Troschel.

Brazil.

a–c. Adult: skins. Rio S. Francisco. Purchased of Mr. Gardiner.

2. Salminus brevidens.

Hydrocyon brevidens, *Cuv. Mém. Mus.* v. p. 364. pl. 27. fig. 1.
Salminus cuvieri, *Cuv. & Val.* xxii. p. 56.

D. 11. A. 29. V. 8. L. lat. 80. L. transv. 12/10.

The length of the head is somewhat less than the height of the body, or than one-fourth of the total (without caudal); maxillary with from 34 to 36 teeth; operculum thrice as high as long; the origin of the dorsal fin is nearly in the middle between the extremity of the snout and the root of the caudal. Caudal fin with the middle rays produced into a short lobe. Each scale with a brownish-black spot at the base; a broad black band along the middle of the caudal fin.

Brazil.

a–b. Adult and half-grown, skins. Cipo River. Presented by Ch. Cumberland, Esq.—Vernacular names: Dourado, Tubaràna.

3. Salminus maxillosus.

Hydrocyon brevidens, *Valenc. in d'Orb. Voy. Amér. Sud, Poiss.* pl. 9. fig. 3.
Salminus maxillosus, *Cuv. & Val.* xxii. p. 62; *Casteln. Anim. Amér. Sud, Poiss.* p. 61. pl. 30. fig. 2.
? Salminus orbignyanus, *Cuv. & Val.* xxii. p. 65.

D. 11. A. 27. V. 9. L. lat. 105.

The middle caudal rays are somewhat produced, and of black colour. Each scale with a brown dot at the base. (*Val.*)

Amazons: ? Buenos Ayres.

35. HYDROCYON.

Hydrocyon, sp., *Cuv. Règne Anim.*
Hydrocyon, *Müll. & Trosch. Hor. Ichth.* i. p. 11.

The dorsal fin is in the middle of the length of the body, above the ventrals; anal of moderate length. Body oblong, compressed, covered with scales of moderate size; belly rounded. Cleft of the mouth wide, without lips; the intermaxillaries and mandibles are armed with strong, pointed teeth, widely set and few in number; they are received in notches of the opposite jaw, and visible externally, when the mouth is closed. Palate toothless. Cheeks covered with the enlarged suborbital bones. Nostrils close together, situated in the same cavity. Orbit with an anterior and posterior adipose eyelid. Gill-opening wide, the gill-membranes being united quite in front of the throat. Intestinal tract short.

Rivers of tropical Africa.

1. Hydrocyon forskalii.

Kelb el bahr; Kelb el moyeh.
Salmo dentex, *Forsk. Descr. Anim.* pp. xiii & 66. no. 97 (not *Hasselq.*).
Characinus dentex, *Geoffr. Descr. Eg. Poiss.* pl. 4. fig. 1.
Hydrocyon forskalii, *Cuv. Mém. Mus.* v. p. 354. pl. 28. fig. 1; *Müll. & Trosch. Hor. Ichthyol.* i. p. 11. tab. 3. fig. 6 (teeth); *Cuv. & Val.* xxii. p. 309.

B. 4. D. 10. A. 15–16. V. 10. L. lat. 45–48. L. transv. $\frac{8-9}{5}$. Vert. $\frac{32}{16-17}$.

The height of the body is contained four times and a half or four times and two-thirds in the total length (without caudal), the length of the head four times and one-fourth or four times and two-thirds. There are *two* series of scales between the lateral line and the elongate scale at the root of the ventral fin. The upper jaw with five or six teeth on each side, the lower with four. Silvery; generally a blackish streak along each series of scales above the lateral line.

Nile. West Africa.

a–c. Adult and half-grown. Lower Nile. From Consul Petherick's Collection.
d. Half-grown. Egypt. From Dr. E. Rüppell's Collection.
e–h. Fine specimens. Chartoum From Consul Petherick's Collection.
i. Adult: stuffed. Old Collection.
k. Adult: skeleton. Lower Nile. From Mr. S. S. Allen's Collection.

2. Hydrocyon brevis.

B. 4. D. 10. A. 16. V. 10. L. lat. 49–50. L. transv. 9/5.

Very similar to *H. forskalii*, but with a shorter body and with more scales below the lateral line.

The height of the body is contained thrice and a half or thrice and two-thirds in the total length (without caudal), the length of the head four times or thrice and four-fifths. There are *three* series of scales between the lateral line and the elongate scale at the root of the ventral fin. The upper jaw with five or six teeth on each side, the lower with four. Silvery; each series of scales above the lateral line with a very faint darker longitudinal streak.

Upper Nile.

a–c. Fine specimens, from 12 to 14 inches long. Chartoum. From Consul Petherick's Collection.

Valenciennes appears to have known this species, although he did not distinguish it from *H. forskalii*; from his remarks it would appear that it extends also to Western Africa.

3. Hydrocyon lineatus.

Hydrocyon lineatus (*Schleg.*), *Bleek. Poiss. Côte de Guin.* p. 125.

D. 10. A. 15. V. 10. L. lat. 44–46. L. transv. 8/5.

Similar to the preceding two species, but with a comparatively longer head.

The height of the body is contained four times in the total length (without caudal), the length of the head thrice and three-fourths or four times. There are *two* series of scales between the lateral line and the elongate scale at the root of the ventral fin. The upper jaw with six teeth on each side, the lower with five. Silvery; each series of scales above the lateral line and the nearest below with a black longitudinal streak.

East and West Africa.

a–b. Skins, 15 and 7½ inches long. Unguezi, River Shire. Presented by Dr. Kirk and Ch. Livingstone, Esq.

c. Adult. West Africa. Purchased of Mr. Dalton.

36. SARCODACES.

Xiphorhamphus, sp., *Müll. & Trosch.*

Dorsal fin placed behind the middle of the length of the body, between ventrals and anal; anal rather short. Head and body elongate, covered with scales of moderate size. Belly rounded. Cleft of the mouth very wide; teeth conical, in a single series in the intermaxillary and maxillary, larger canines being mixed with smaller teeth; there is a series of small teeth on each side of the palate, but they are implanted on a process of the intermaxillary bone, which extends far backwards along the inner side of the maxillary. Mandible with two series of teeth, the inner being formed by very small teeth implanted on the edge of the inner lamella of the bone. Nostrils lateral, close together, separated by a membrane only, and situated immediately before the eye. Gill-openings wide, the gill-membranes being free and separate; gill-rakers slender, lanceolate, widely set.

West Africa.

1. Sarcodaces odoe.

Salmo odoë, *Bloch*, taf. 386.
Xiphorhamphus odoë, *Müll. & Trosch. Hor. Ichth.* i. p. 18.
Xiphorhynchus odoë, *Cuv. & Val.* xxii. p. 345.

B. 4. D. 9. A. 11. V. 9. L. lat. 60.

Vertical and ventral fins with black spots.

West Africa.

a. Adult. Purchased of Mr. Dalton.

b. Adult: skull. Purchased of Mr. Dalton.

37. OLIGOSARCUS.

Dorsal fin placed in the middle of the length of the body, above the space between ventrals and anal; anal long. Head and body compressed, oblong, covered with scales of moderate size; lateral line complete; belly rounded. Cleft of the mouth wide; teeth conical, in a single series in the intermaxillary, maxillary, mandible, and on the palatine bones; some of the teeth in the intermaxillary and mandible are canine teeth. Nostrils close together. Gill-openings very wide, the gill-membranes not attached to the isthmus; gill-rakers slender, lanceolate.

Brazil.

1. Oligosarcus argenteus.

D. 11. A. 25. V. 8. L. lat. 43. L. transv. 9/7.

The height of the body is nearly equal to the length of the head, which is two-sevenths of the total (the caudal fin not included); the depth of the head equals its length without snout; the width of the interorbital space is a little less than the diameter of the eye, which is one-fourth of the length of the head, and equal to the extent of the snout. Cleft of the mouth wide, the maxillary extending somewhat behind the vertical from the centre of the eye; the intermaxillary has two or three feeble canine teeth on each side, the anterior pair being received between the front canine teeth of the lower jaw, which are twice as strong as the upper ones. The lateral teeth of the mandible and those of the maxillary and of the palatines are equally small. Nearly the entire cheek is covered by the infraorbital bones, only a narrow space above the præopercular limb remaining naked. The operculum is slightly emarginate behind, and twice as high as long. The origin of the dorsal fin is exactly in the middle between the end of the snout and the root of the caudal fin, and a little behind the insertion of the ventrals; its last rays are opposite to those of the anal. Caudal deeply forked, shorter than the head; the pectoral extends to, or somewhat beyond, the root of the ventral fins; the ventral is shorter than the pectoral, rather more than half as long as the head, and extending to the vent.

The two specimens, which have been preserved in spirit for a long time, are light brownish, shining silvery. A silvery band runs along the middle of the body, and terminates in an oblong black spot before the root of the caudal.

Brazil.

a–b. Three and a half inches long.

38. XIPHORHAMPHUS.

Xiphorhamphus, sp., *Müll. & Trosch. Hor. Ichth.* i. p. 32.
Xiphorhynchus, sp., *Cuv. & Val.* xxii. p. 336.

Dorsal fin placed behind the middle of the length of the body, between ventrals and anal; anal long. Head and body more or less elongate, covered with small scales; lateral line complete. Belly rounded. Cleft of the mouth wide; teeth conical, in a single series, smaller ones being intermixed with strong canine teeth; palatine with a series of small teeth. Nostrils close together, separated by a membrane only. Gill-openings wide, the gill-membranes being free and separate; gill-rakers very short. Intestinal tract with a single circumvolution; cæcal sac of stomach very long.

South America, east of the Andes.

The species may be referred to two groups:—

a. Maxillary with canine teeth, p. 354.
β. All the maxillary teeth of equal length, p. 355.

a. Maxillary with canine teeth.

1. Xiphorhamphus falcirostris.

Hydrocyon falcirostris, *Cuv. Mém. Mus.* v. p. 361. pl. 27. fig. 3.
Xiphorhamphus falcirostris, *Müll. & Trosch. Hor. Ichth.* i. p. 18; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 58.

D. 11. A. 22–25. V. 8. L. lat. 160.

The height of the body is two-elevenths, one-sixth or one-seventh of the total length (without caudal), the length of the head two-sevenths. Snout much elongate, its length being equal to the distance between the anterior margin of the orbit and the posterior of the præoperculum; the entire dorsal fin is in the hinder third of the total length (without caudal). A round deep-black spot on the root of the caudal fin, none on the shoulder.

Brazil, Guianas.

a. Adult: stuffed. Demerara. From the Collection of the Zoological Society.
b. Half-grown. River Cupai. Purchased of Mr. Stevens.

It is very improbable that the description given by Valenciennes in the 22nd volume, p. 341, is taken from the typical specimen as he asserts. Cuvier says distinctly that his specimen was 20 inches long, that it had more than 100 scales in a longitudinal line, and 25 anal rays. Valenciennes, however, describes his specimen as being 17 inches long, and as having 200 scales in a longitudinal line, and 30 anal rays.

2. Xiphorhamphus falcatus.

Salmo falcatus, *Bloch,* taf. 385.
Xiphorhamphus falcatus, *Müll. & Trosch. Hor. Ichth.* i. p. 17; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 57.
Xiphorhynchus falcatus, *Cuv. & Val.* xxii. p. 337.

B. 4. D. 11. A. 28–30. V. 8. L. lat. 100–120*.

The height of the body is one-fifth or two-elevenths of the total length (with the caudal), the length of the head one-fourth; the length of the cleft of the mouth is nearly one-half of that of the head. The origin of the dorsal fin is in the second third of the total length (without caudal). A black humeral and caudal spot.

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* Müller and Troschel say that the lateral line is composed of "about" 80 scales, whilst a higher number has been found by Valenciennes and Kner.

Brazil, Guiana.

3. Xiphorhamphus microlepis.

Hydrocyon microlepis, *Schomb. Fish. Guian.* i. p. 247. pl. 24 (25 *a*, Hydrocyon? armatus).

Xiphorhamphus microlepis, *Müll. & Trosch. Hor. Ichth.* i. p. 18.

D. 11. A. 31–33. L. lat. 100–110.

The height of the body is one-sixth or one-seventh of the total length (with the caudal), the length of the head somewhat less than one-fourth; the length of the cleft of the mouth is more than one-half of that of the head. The origin of the dorsal fin is in the second third of the total length (without caudal). A black spot on the base of the caudal fin.

Guiana.

a–b. Young. British Guiana. Presented by Sir R. Schomburgk.

c. Adult. Essequibo. From Mr. Ehrhardt's Collection.

4. Xiphorhamphus ferox.

Günth. Ann. & Mag. Nat. Hist. 1863, xii. p. 443.

D. 11. A. 25–26. V. 8. L. lat. 95.

Maxillary with two distant canine teeth in its upper portion. The height of the body is contained four times and two-thirds in the total length (without caudal), the length of the head thrice and a half; the length of the snout is equal to the distance of the posterior præopercular margin from the middle of the eye. The diameter of the eye is more than one-half of the length of the snout, and one-fifth of that of the head. The maxillary extends a little beyond the hind margin of the orbit. The origin of the dorsal fin is midway between occiput and base of the caudal; the anal fin commences immediately behind the dorsal; caudal deeply forked. The pectoral does not extend to the ventral. A large blackish blotch behind the gill-opening; the middle caudal rays orange-coloured, with a round black spot at the base.

Essequibo.

a–b. From 6 to 7 inches long: types of the species. From Mr. Ehrhardt's Collection.

β. All the maxillary teeth of equal length.

5. Xiphorhamphus pericoptes.

Müll. & Trosch. Hor. Ichth. i. p. 32. taf. 5. fig. 1.

D. 11. A. 33. V. 9. L. lat. 74.

All the maxillary teeth are equally small. The height of the body is contained thrice and three-fourths in the total length (without caudal), the length of the head thrice and one-third. The length of the snout is two-fifths of that of the head, and the maxillary extends to behind the eye. The anal fin commences below the last dorsal rays, and the pectoral does not extend to the ventral. Greenish, with metallic reflexions. (*M. & T.*)

Brazil.

6. **Xiphorhamphus hepsetus.**

Hydrocyon hepsetus, *Cuv. Règne Anim.*; *D'Orb. Voy. Amér. Sud. Poiss.* pl. 9. fig. 2.
—— falcatus, *Quoy & Gaim. Voy. Uran. Zool.* p. 221. pl. 48. fig. 2
Xiphorhynchus hepsetus, *Cuv. & Val.* xxii. p. 343.

D. 11. A. 30. L. lat. 72.

All the maxillary teeth are equally small. The height of the body is nearly equal to the length of the head, and about two-sevenths of the total (without caudal). The pectoral fin extends to the middle of the ventral. A silvery band along the side; generally a blackish humeral spot and caudal band.

Rio Janeiro.

7. **Xiphorhamphus jenynsii.**

Hydrocyon hepsetus, *Jenyns, Zool. Beagle, Fish.* p. 129 (not *Cuv.*).

D. 11. A. 29. V. 8. L. lat. 57–58. L. transv. 16.

All the maxillary teeth are equally small. The height of the body is equal to the length of the head, and two-sevenths of the total (without caudal). The maxillary extends to the vertical from the posterior margin of the orbit; the diameter of the eye is four-fifths of the length of the snout, and not quite one-fourth of that of the head. The anal fin commences below the last dorsal ray; the pectoral extends to the ventral. Bluish silvery, with an indistinct band along the middle of the caudal. (*Jenyns.*)

Freshwater lake of Maldonado.

39. **XIPHOSTOMA.**

Xiphostoma, *Spix, Pisc. Bras.* p. 78.

Dorsal fin placed behind the middle of the length of the body, behind the ventrals; anal short; caudal fin emarginate. Head and body elongate, the latter covered with small scales; belly rounded; head osseous; snout produced, conical; intermaxillary and mandibulary bones very long, armed with a single series of very small teeth, the point of which is directed backwards; maxillary short, toothed; palatine bones with numerous granular minute teeth. Gill-openings very wide, the gill-membranes not united below the throat. Intestines with a single circumvolution.

Tropical America, east of the Andes.

1. Xiphostoma lucius.

Hydrocyon lucius, *Cuv. Mém. Mus.* v. p. 359. pl. 26. fig. 3.
Xiphostoma lucius, *Cuv. & Val.* xxii. p. 350.

B. 5. D. 9. A. 10. V. 8. L. lat. 106.

The length of the head is one-fourth of the total (with the caudal); the upper jaw is not produced into a cartilaginous appendage; the anterior margin of the orbit occupies the middle of the length of the head. The dorsal fin corresponds to the middle of the interspace between ventrals and anal. (*Val.*)

Hab. —— ?

2. Xiphostoma cuvieri.

Xiphostoma cuvieri, *Spix, Pisc. Bras.* p. 79. tab. 42; *Müll. & Trosch. Hor. Ichth.* i. p. 20. tab. 3. fig. 3; *Cuv. & Val.* xxii. p. 355; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 60. taf. 8. fig. 17.
—— oseryi, *Casteln. Anim. Amér. Sud, Poiss.* p. 76. pl. 40. fig. 1.

D. 10. A. 11. V. 8. L. lat. 105. L. transv. 24.

The length of the head is one-fourth, or more than one-fourth, of the total (without caudal); the upper jaw is produced into a cartilaginous appendage; the toothed portion of the intermaxillary is more than half as long as the head; the anterior margin of the orbit occupies the middle of the length of the head, the nasal appendage not included. The ventral is inserted immediately before the dorsal. A round black spot at the root of the caudal fin.

Brazil.

3. Xiphostoma ocellatum.

Schomburgk, Fish. Guiana, i. p. 245. tab. 23; *Cuv. & Val.* xxii. p. 355; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 61. taf. 8. fig. 18 (head).

D. 10. A. 11. V. 9. L. lat. 106–110. L. transv $\frac{12-13}{8-9}$.

The length of the head is one-fourth of the total (with the caudal); extremity of the upper jaw with a short cartilaginous appendage; the entire intermaxillary bone is only half as long as the head; anterior margin of the orbit somewhat before the middle of the length of the head. Dorsal fin nearer to the ventrals than to the anal. A black ocellus on the base of the caudal fin.

Brazil, Guiana.

4. Xiphostoma maculatum.

Cuv. & Val. xxii. p. 357; *Casteln. Anim. Amér. Sud, Poiss.* p. 76. pl. 40. fig. 2.

D. 10. A. 11. L. lat. 88.

Snout narrow, pointed, the upper jaw being produced into an appendage; the hind part of the dorsal fin is above the anterior anal rays. Vertical fins with blackish spots.

Amazons.

a. River Cupai Purchased of Mr. Stevens.

5. **Xiphostoma hujeta.**

Cuv. & Val. xxii. p. 358.

D. 10. A. 10.

Snout rather broad and obtuse, curved at its extremity; the hind part of the dorsal fin is above the origin of the anal. A black, yellow-edged ocellus at the base of the caudal. (*Val.*)

Maracaïbo.

40. CYNODON.

Cynodon, *Spix, Pisc. Bras.* p. 76; *Cuv. & Val.* xxii. p. 323.
Raphiodon, *Agass. in Spix, Pisc. Bras.* p. 76.
Hydrolycus et Raphiodon, *Müll. & Trosch. Hor. Ichth.* i. pp. 18, 19.

Dorsal fin placed behind, or nearly in, the middle of the length of the body, behind the ventrals; anal long. Head and body compressed, oblong, the latter covered with very small scales; belly compressed, keeled. Teeth in the intermaxillary, maxillary, and mandible in a single series, conical, widely set, of unequal size; a pair of very large canine teeth anteriorly in the lower jaw, received in two grooves on the palate; palate with patches of minute granulated teeth. Gill-openings very wide, the gill-membranes not united below the throat. The outer branchial arch without gill-rakers, but with very short tubercles.

Brazil, Guianas.

a. The dorsal fin is between ventral and anal: *Hydrolycus*, M. & T.

1. **Cynodon scomberoides.**

Hydrocyon scomberoides, *Cuv. Mém. Mus.* v. p. 357. pl. 27. fig. 2.
Hydrolycus scomberoides, *Müll. & Trosch. Hor. Ichth.* i. p. 19. tab. 5. fig. 2 (dentition).
Cynodon scomberoides, *Cuv. & Val.* xxii. p. 324; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 52; *Casteln. Anim. Amér. Sud, Poiss.* p. 75. pl. 39. fig. 2.

B. 5. D. 12. A. 33–40. P. 17. V. 9.

The height of the body is one-fourth or two-sevenths of the total length (without caudal), the length of the head sometimes more and sometimes less than two-ninths. Dorsal fin exactly in the middle between ventrals and anal. Silvery; humerus blackish.

Brazil, Guiana.

a. Adult. British Guiana. Presented by Sir R. Schomburgk.
b. Half-grown. River Capin. Purchased of Mr. Stevens.

β. The dorsal fin commences above the anal: *Cynodon*, Spix.

2. Cynodon vulpinus.

Cynodon vulpinus, *Spix, Pisc. Bras.* tab. 26; *Cuv. & Val.* xxii. p. 329; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 55; *Casteln. Anim. Amér. Sud, Poiss.* pl. 39. fig. 1.

Raphiodon vulpinus, *Agass. in Spix, Pisc. Bras.* p. 76.

Hydropardus . *Reinh. Vidensk. Meddel. Naturh. Foren. Kjöbenh.* 1849, p. .

B. 5. D. 12. A. 48. P. 17. V. 8.

The height of the body is one-fifth of the total length, with or without the caudal. Dorsal fin commencing behind the origin of the anal; ventrals very small*. Uniform silvery.

Brazil.

3. Cynodon gibbus.

Cynodon gibbus, *Spix, Pisc. Bras.* tab. 27; *Cuv. & Val.* xxii. p. 333; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 54.

Raphiodon gibbus, *Agass. in Spix, Pisc. Bras.* p. 77.

B. 5. D. 12. A. 82. P. 17. V. 8.

The greatest depth of the body is one-fourth of the total length (with the caudal); the profile above the eyes is concave. The dorsal and anal fins commence nearly in the same vertical; ventrals small. A round black spot behind the gill-opening.

Brazil.

Seventh Group. DISTICHODONTINA.

Characinidæ with an adipose fin and with the dorsal rather elongate, with the gill-membranes attached to the isthmus, and with the belly rounded.

Tropical Africa.

41. DISTICHODUS.

Distichodus, *Müll. & Trosch. Hor. Ichth.* i. p. 12.

Dorsal fin rather long, placed in the middle of the length of the body, above the ventrals; anal of moderate length; caudal and adipose fins covered with small scales. Body oblong, covered with small scales. Belly rounded. Cleft of the mouth transverse, small; intermaxillary and mandible with a series of flattish bicuspid incisors; there is generally another series of smaller similar teeth behind the front series; palate toothless. Nostrils close together, with a valve between them, overlapping the posterior. Gill-openings of moderate width, the gill-membranes being attached to the isthmus, having a free hinder edge along nearly their entire extent.

Tropical Africa.

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* One or two are accidentally entirely absent.

a. Each jaw with two series of teeth.

1. Distichodus niloticus.

Salmo niloticus, *Hasselq. Reise*, p. 422.
Nefasch, *Forsk. Descript. Anim.* p. 66.
Salmo ægyptiacus, *L. Gm.* i. p. 1386.
—— ægyptius, *Bl. Schn.* p. 418.
Characinus nefasch, *Lacép.* v. pp. 272, 274; *Geoffr. Descr. Eg. Poiss.* pl. 5. fig. 1.
Distichodus niloticus, *Müll. & Trosch. Hor. Ichth.* i. p. 12. tab. 1. fig. 3 (dentition).
—— nefasch, *Cuv. & Val.* xxii. p. 175.

B. 4. D. 24–26. A. 14–15. V. 11. L. lat. 103–105. L. transv. 20/19.

The height of the body is two-fifths or less than two-fifths of the total length (without caudal) in mature specimens, and only one-third in young ones. The length of the head is contained four times and two-thirds or four times and three-fourths in that of the body in mature specimens, but it is one-fourth of it in young ones. Snout obtuse; interorbital space broad, depressed, not very convex. The lower jaw with about thirty-six teeth in the front series; young individuals have less. The anal fin extends backwards to, or nearly to, the root of the caudal, if laid backwards. Silvery, back greenish; dorsal fin with short, oblique, narrow blackish streaks on the inter-radial membrane. Young specimens with a blackish spot behind the head, between the lateral line and the gill-opening, and with several indistinct transverse blackish blotches on the body.

Upper and Lower Nile.

a. Fine specimen, 30 inches long. Lower Nile. From Consul Petherick's Collection.
b–d. Young. Lower Nile. From Consul Petherick's Collection.
e–m. Adult, half-grown, and young. Upper Nile. From Consul Petherick's Collection.
n. Half-grown: skin, in spirits. Egypt. Presented by J. Burton, Esq.

2. Distichodus rostratus.

D. 23–25. A. 14. V. 11. L. lat. 89–98. L. transv. 16/16.

The height of the body is contained thrice and one-fourth in the total length (without caudal), the length of the head four times and three-fourths. Snout rather pointed; in a specimen 14 inches long it is more than twice as long as the eye; interorbital space broad, convex, its width being contained twice and one-third in the length of the head. The lower jaw with about twenty-eight teeth. The anal fin extends somewhat beyond the root of the caudal, if laid backwards. Silvery, back greenish, sides clouded with blackish; dorsal fin with small blackish spots.

This species is otherwise similar to *D. niloticus*, from which it will be readily distinguished by its prominent nose, fewer scales on the back, and long anal fin; we are not quite certain whether the specimen from West Africa belongs to the present species, as it has been much injured.

Nile. West Africa.

a. Fine specimen, 14 inches long. Lower Nile. From Consul Petherick's Collection.
b. Stuffed: 32 inches long. West Africa. Purchased of Mr. Dalton.

3. **Distichodus engycephalus.**

D. 24. A. 13. V. 11. L. lat. 80. L. transv. 14/13.

The height of the body is contained thrice, or twice and three-fourths, in the total length (without caudal), the length of the head four times and one-third or four times and one-fourth. Snout pointed, compressed; head compressed; the interorbital space is very convex, its width being contained twice and two-thirds in the length of the head. The lower jaw with about twenty teeth. The anal fin does not extend to the root of the caudal, if laid backwards. Silvery; sides with four irregular series of round blackish spots, each as large as, or smaller than, the eye. Dorsal fin with very indistinct spots, which are partly confluent.

This species will be easily recognized by its compressed head.

Upper Nile.

a–b. From 5–6½ inches long. Chartoum. From Consul Petherick's Collection.

4. **Distichodus brevipinnis.**

D. 20. A. 15. V. 11. L. lat. 90. L. transv. 17/23.

The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head thrice and three-fourths. Snout as broad as, or even broader than, long, obtuse in front; lips thick; interorbital space very convex, its width being contained twice and one-fifth in the length of the head. The lower jaw with twenty or twenty-two teeth. The length of the base of the dorsal fin is only three-fourths of that of the head; the distance between the two dorsal fins equals the length of the base of the adipose fin. The anal extends to the root of the caudal, if laid backwards. Body with large rounded blackish spots, each being twice as large as the eye. Dorsal fin with subquadrangular blackish spots, irregularly arranged.

Upper Nile.

a–c. Five and six inches long. Chartoum. From Consul Petherick's Collection.

5. **Distichodus schenga.**

Peters, Monatsber. Akad. Wiss. Berl. 1852, p. 276.

D. 26. A. 15–16. L. lat. 67–69. L. transv. 13/13.

The height of the body is one-third of the total length (without caudal), the length of the head nearly one-fifth. Snout compressed, somewhat pointed; interorbital space very convex, its width being a little more than one-third of the length of the head. The lower jaw with about sixteen teeth; the posterior series of the upper jaw is immediately behind the anterior. The fifth infraorbital bone much smaller than the sixth. Body uniformly coloured (in a dried state); dorsal with numerous blackish spots.

Mozambique.

a–b. Adult: skins. River Shire. Presented by Ch. Livingstone, Esq., and Dr. Kirk.

6. **Distichodus mossambicus.**

Peters, Monatsber. Akad. Wiss. Berl. 1852, p. 275.

D. 26–27. A. 15–16. V. 12. L. lat. 68.

The length of the head is one-fifth of the total (with the caudal). The fifth and sixth infraorbital bones are equal in extent. The outer series of incisors is composed of eighteen teeth. Snout subcylindrical. Body with dark cross-bands; fins blackish. (*Pet.*)

Mozambique.

β. Only one series of teeth in the jaws.

7. **Distichodus macrolepis.**

D. 26. A. 14. L. lat. 67. L. transv. 14/12.

The height of the body is one-third of the total length (without caudal), the length of the head rather more than one-fourth. The upper jaw does not project much beyond the lower; interorbital space convex, its width being one-third of the length of the head. The lower jaw with about sixteen teeth; there is only one series of teeth in each jaw. Coloration uniform (in a dried state).

Eastern Africa.

a. Skin, 14 inches long. River Shire, near the island of Dakanamois. Presented by Dr. Kirk.

Eighth Group. ICHTHYBORINA.

Characinidæ with an adipose fin and with the dorsal rays increased in number, with the gill-membranes free from the isthmus, with the belly rounded, and with canine teeth.

Africa.

42. ICHTHYBORUS.

Dorsal fin somewhat behind the middle of the length of the body, with fourteen or seventeen rays; anal of moderate length; ventrals a little in advance of the dorsal; caudal scaly, forked. Body compressed, elongate, covered with small scales; lateral line complete. Cheeks naked. Cleft of the mouth wide: the intermaxillaries of both sides coalesce, forming a very moveable flattish bone, which is armed with a pair of canine teeth anteriorly, and with a series of compressed triangular teeth laterally; its inner surface, which forms the anterior part of the roof of the mouth, is covered with minute pointed teeth. The dentaries of the mandible also are coalescent into a single bone, without median suture; their dentition is the same as that of the upper jaw, but there are three canine teeth, the central tooth standing in front of the jaw and fitting between the upper canines. The maxillary is very small, attached to the extremity of the intermaxillary. Palate toothless. Nostrils in front of the eye, close together, the posterior wide, open. Gill-openings wide, the gill-membranes being separate; gill-rakers short, lanceolate.

Nile.

For our first acquaintance with the fishes of this genus we are indebted to Joannis, who gives a description and figure which do not leave any doubt as to the generic affinity of the fishes found by him, and rediscoverd by Mr. Petherick on his last expedition to the Upper Nile. I have long hesitated to separate them specifically, but as Joannis says that there are only fifteen scales in a transverse row, and as he represents in the figure the scales of a corresponding size, it appears probable that the Nile is inhabited by two distinct species. They must be very scarce, as Joannis and Petherick are the only travellers who had the good fortune of meeting with them. It is also worthy of notice that only two examples were in the extensive collections made by Mr. Petherick, which appears to confirm the remark made by Joannis that these fishes are always found in pairs.

1. Ichthyborus microlepis.

B. 4. D. 15–17. A. 15–16. P. 14–15. V. 10. L. lat. 100.
L. transv. 12/14.

The height of the body is contained four times and three-fourths or five times and one-fourth in the total length (without caudal), the length of the head thrice and one-fourth or thrice and two-thirds; the diameter of the eye is somewhat less than the width of the interorbital space, one-half of the length of the snout, and two-fifths of that of the postorbital portion of the head. Intermaxillary with nineteen, mandible with fourteen teeth on each side. Cheek quite naked, the suborbital ring being narrow. Operculum with radiating striæ, twice as high as long. The origin of the dorsal fin is nearer to the root of the caudal than to the extremity of the snout; it is higher than long. Anal fin somewhat longer than high; caudal with the lobes rounded, two-thirds as long as the head. Pectoral as long as the ventral, rather more than half as long as the head; the pectoral does not extend to the ventral, which terminates at a great distance from the vent. Uniform silvery; dorsal rays with some faint dots; caudal with five or six rather irregular transverse series of round black spots.

Upper Nile.

a–b. Six and a half inches long. Chartoum. From Consul Petherick's Collection.

2. Ichthyborus besse.

Characinus besse, *Joannis, Guér. Mag. Zool.* 1835, pl. 10.

D. 14. A. 17. P. 12. V. 10. L. transv. 15.

The following is an abstract from Joannis's description:—

"La tête est à peu pres le quart de la longueur totale du corps; elle est cuneiforme. Œil assez grand, situe tout au haut de la tête, et à peu pres a moitié de sa longueur. Bouche fendue du quart de la longueur de la tête; les lèvres sont bordées de noir. La mâchoire inferieure, garnie de chaque côté de quatorze dents courtes, aigues, assez fortes, légèrement couchées en arriere, porte a son extremité antérieure trois forts crochets; celui du milieu se loge dans une cavité de la lèvre superieure; les deux lateraux remontent de chaque côté du museau. La mâchoire superieure, recourbee en arriere, et garnie de chaque côté de dix-neuf dents semblables aux precedentes, est également terminée en avant par deux forts crochets, recouvrant le bout de la mâchoire inférieure, quand la bouche est fermée. Dans l'état de repos, le museau est pointu. L'opercule est tres ouvert; sa pente posterieure se prolonge plus haut que le niveau superieur de l'œil. La membrane branchiostege est soutenue par quatre rayons lamelleux. Les narines sont au bout du museau. Corps mince et très allongé; sa plus grande hauteur, qui est à la base de la dorsale, ne forme que les $\frac{2}{9}$ de la longueur totale. Anus un peu en arrière du tiers postérieur du corps. Écailles très fines; on en compte quinze sur une rangee oblique. Ventrales de dix rayons articulés, à peu près de même longueur et de même largeur que les pectorales; elles sont insérées un peu en avant de la moitié du corps, et peu élevées au-dessus de la ligne du ventre. Dorsale de quatorze rayons articulés, pointue, rhomboïdale, et un peu courbee en avant; elle est implantée à la moitié du longueur du corps, sur le point le plus élevé du dos. Anale de dix-sept rayons articulés, insérée au tiers postérieur de la distance qui existe du bout de la queue jusqu'à l'œil. Caudale profondément échancrée en deux lobes arrondis a la pointe. La caudale est marquetee de cinq bandes de taches brun-noir, suivant la direction des rayons de cette nageoire. On retrouve encore quelques taches plus légères à la dorsale et à l'anale, et même aux ventrales. Les habitudes de ce poisson me sont tout-à-fait inconnues. Son extreme rarete à Thèbes, où je ne m'en suis procuré que deux du même coup de filet, m'a empêché de pouvoir rien recueillir à cet égard. Le vieux pêcheur dont je me servais, m'a assuré qu'on n'en pêchait pas tous les ans, et que lorsqu'il tombait dans les filets, c'était toujours deux à la fois. Ce fait semblerait établir que ce poisson quitte le Nile supérieur à l'époque des amours, et s'accouple pour descendre. Ceux que je me suis procurés furent pris au mois de mai.

"Les Arabes le nomment *Bessé*."

Ninth Group. CRENUCHINA.

Characinidæ with an adipose fin and with the dorsal rather elongate, with the gill-membranes free from the isthmus, with the belly rounded, and without canine teeth.

South America.

43. CRENUCHUS.

Crenuchus, *Günth. Ann. & Mag. Nat. Hist.* 1863, xii. p. 443.

Dorsal fin rather long, placed somewhat behind the middle of the length of the body, above the space between the ventrals and the anal fin. Anal of moderate length. Caudal and adipose* fins without scales. Body oblong, compressed, covered with scales of moderate size; lateral line none; belly rounded. Cleft of the mouth rather wide: intermaxillary and mandible with a single series of small tricuspid teeth; maxillary and palate without teeth. Nostrils close together. Gill-openings wide, the gill-membranes not attached to the isthmus; gill-rakers elongate, lanceolate

British Guiana.

1. Crenuchus spilurus.

Günth. l. c

D. 17. A. 11. V. 8. L. lat. 30. L. transv. 10

Head and body much compressed; the depth of the body is less than the length of the head, which is contained thrice and one-third in the total length, the caudal fin not included. The eye is situated in the anterior half of the length of the head, its diameter being equal to the extent of the snout, and to the width of the interorbital space, which is one-fourth of the length of the head. The cleft of the mouth is rather wide, the maxillary extending somewhat beyond the vertical from the centre of the eye; jaws equal in length anteriorly. The infraorbital bones are not much dilated, their greatest width being equal to that of the orbit; a great part of the cheek remains naked. The dorsal fin commences a little nearer to the extremity of the snout than to the root of the caudal fin, somewhat in front of the root of the ventral; its last ray is opposite to the origin of the anal fin; the middle rays are as high as, or even higher than, the body, equal in length to the longest anal rays. Caudal fin emarginate; pectoral rather small, not extending to the root of the ventral; ventrals longer than pectoral, reaching to the vent.

Brownish, each scale with the margin darker. A round black spot on the end of the tail. Vertical fins black, with regular, round white spots.

Essequibo

a. Two and a quarter inches long. Purchased of Mr. Ehrhardt.

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* In the original description the adipose fin, which is extremely small, has been overlooked.

Tenth Group. SERRASALMONINA.

Characinidæ with an adipose fin and with the dorsal rather elongate, with the gill-membranes free from the isthmus, and with the belly serrated.

South America.

44. MYLESINUS.

Mylesinus, *Cuv. & Val.* xxii. p. 234.

Dorsal fin rather elongate, placed behind the middle of the length of the body, above the interspace between ventrals and anal; anal fin long. Head and body compressed, elevated, covered with very small scales; belly rounded in front of the ventrals, keeled and serrated behind them. Cleft of the mouth of moderate width: teeth large, compressed, three-lobed: those of the intermaxillary in two series which are close together, those of the mandible in a single series, without a pair of posterior conical teeth.

Guiana, Brazil.

1. Mylesinus schomburgkii.

Cuv. & Val. xxii. p. 235. pl. 644; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 32. taf. 3. fig. 7.

Valenciennes describes this species from a head and from a drawing, both having been given to him by Schomburgk. According to the drawing, the principal specific characters would be: a body the depth of which is rather more than one-half of the total length (the caudal fin not included), a short adipose fin, and an anal fin the posterior half of which is produced into a lobe.

If this drawing be correct, the fish described and figured by Kner, from specimens from the Rio Vaupé, cannot be identical with that found by Schomburgk, the lobe of the anal fin being formed by the *middle* rays. Kner adds other characters: D. 21–22. A. 32–35. V. 8. The height of the body is one-half of the total length (without caudal), the length of the head one-fourth; the abdominal serrature behind the ventrals is formed by from eight to ten osseous plates; each of the fifteen or sixteen posterior anal rays terminates in two branches, one being bent towards the right, the other to the left.

45. SERRASALMO[*].

Serrasalmus, *Lacép.* v. p. 283.

Pygocentrus, Pygopristis, et Serrasalmo, *Müll. & Trosch. Hor. Ichth.* i. pp. 20 & 21.

Dorsal fin rather elongate, placed behind the middle of the length of the body, between ventrals and anal; anal long. Head and body compressed, more or less elevated, covered with very small scales; belly keeled, serrated. Cleft of the mouth of moderate width: teeth large, compressed, sharp, pointed, with more or less lateral lobes, in a single series in the intermaxillary and mandible; none in the maxillary, which is short. Gill-openings very wide, the gill-membranes being slightly united below the throat. Intestinal tract with a single circumvolution.

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[*] 1. Pygocentrus palometa, *C. & V.* xxii. p. 296.—Mouth extremely small; eyes very large; dorsal fin falciform, opposed to the ventrals; pectorals and ventrals very small.—Brazil.

2. Serrasalmo, *Humb. Observ. Zool.* ii. p. 173. pl. 47. fig. 1; Serrasalmus caribe, *C. & V.* xxii. p. 279.—Orinoco.

3. Serrasalmo gibbus, *Casteln. Anim. Amér. Sud, Poiss.* p. 71. pl. 38. fig. 1. —Araguay.

Brazil, Guianas.

The species have been referred to the following subgeneric groups:

* No teeth on the palate; teeth in the jaws serrated: *Pygopristis,* M. & T., p. 367.

** No teeth on the palate; teeth in the jaws simply cutting: *Pygocentrus,* M. & T., p. 368.

*** A more or less complete series of teeth on each side of the palate: *Serrasalmo,* Lacép., p. 369.

* No teeth on the palate; teeth in the jaws serrated: *Pygopristis,* M. & T.

1. Serrasalmo denticulatus.

Serrasalmo denticulatus, *Cuv. Mém. Mus.* v. p. 371.
—— punctatus, *Schomburgk, Fish. Guiana,* i. p. 223. taf. 17.
Pygopristis denticulatus, *Müll. & Trosch. Hor. Ichth.* i. p. 34. tab. 9. fig. 1 (young); *Cuv. & Val.* xxii. p. 297.
—— fumarius, *Müll. & Trosch. l. c.* p. 35. tab. 9. fig. 2; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 35.

B. 4. D. 19. A. 35. V. 7.

The height of the body is contained once and two-thirds in the total length (without caudal), the length of the head nearly four times; snout obtuse, about as long as the eye. The second infraorbital bone is separated from the præopercular limb by a naked space, which is nearly as wide as the infraorbital. Abdominal serrature composed of from thirty to thirty-four spinous plates. The length of the adipose fin is two-sevenths of that of the dorsal; none of the fin-rays prolonged.

Guiana.

a, b, c. Adult and half-grown. British Guiana. Presented by Sir R. Schomburgk and Dr. Hancock.

2. Serrasalmo serrulatus.

Pygopristis serrulatus, *Cuv. & Val.* xxii. p. 300; *Casteln, Anim. Amér. Sud, Poiss.* pl. 38. fig. 3.

D. 16. A. 33.

The height of the body is one-half of the total length, the caudal included. Adipose fin small; none of the fin-rays are prolonged. Vertical fins with blackish margins.

Araguay, Amazons.

** No teeth on the palate; teeth in the jaws simply cutting:
Pygocentrus, M. & T.

3. Serrasalmo piraya.

Piraya, *Marcgr. Hist. Nat. Bras.* p. 164.
Serrasalmo piraya, *Cuv. Mém. Mus.* v. p. 368. pl. 28. fig. 4 (bad).
—— piranha, *Spix, Pisc. Bras.* p. 71. tab. 28.
? Serrasalmo nigricans, *Spix, l. c.* p. 72. tab. 30 (young?).
Pygocentrus piraya, *Müll. & Trosch. Hor. Ichth.* i. p. 20; *Cuv. & Val.* xxii. p. 291; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 36; (? *Casteln. Anim. Amér. Sud; Poiss.* p. 72. pl. 38. fig. 2.)
? Pygocentrus nigricans, *Müll. & Trosch. l. c.* p. 21.

D. 17–18. A. 30–33. V. 7. L. lat. 95–100.

The height of the body is more than one-half of the total length (without caudal); snout very obtuse, short; the width of the interorbital space is only a little less than one-half of the length of the head. The second infraorbital bone touches, or nearly touches, the præopercular limb. The origin of the dorsal fin is considerably nearer to the root of the caudal fin than to the end of the snout. Abdominal serrature composed of from twenty-four to twenty-seven spinous plates. Adipose fin in old specimens rayed. Gill-rakers of the outer branchial arch lanceolate.

Brazil, Guiana.

a. Adult: stuffed. Brazil. Purchased of Mr. Parreys.
b. Fine specimen. River Cupai. Purchased of Mr. Stevens.
c. Adult: skin. Demerara. From Mr. Scrivener's Collection.
d, *e–f*. Young. From the Haslar Collection.

4. Serrasalmo scapularis.

D. 15–16. A. 32–34. V. 7. L. lat. 95.

The height of the body is contained once and three-fourths in the total length (without caudal), the length of the head thrice and one-eighth; nape of the neck much elevated, the upper profile of the head, above the eye, a little concave. Snout very obtuse, and short, with the mandible prominent; the diameter of the eye is one-fourth, the width of the interorbital space two-fifths of the length of the head. There is a stripe of naked skin between the second infraorbital bone and the limb of the præoperculum. The origin of the dorsal fin is considerably nearer to the root of the caudal fin than to the end of the snout. Abdominal serrature composed of twenty-seven or twenty-eight spinous plates, the spines being not very prominent. Gill-rakers of the outer branchial arch short, with broad base and with a slender tip. Silvery, iridescent, sometimes with small blackish spots; a large blackish blotch behind the gill-opening; vertical fins blackish.

Essequibo River.

a–c. Fine specimens, from 6 to 8 inches long. From Mr. Ehrhardt's Collection.
Half-grown. British Guiana. Presented by Sir R. Schomburgk.

5. Serrasalmo niger.

Serrasalmo niger, *Schomburgk, Fish. Brit. Guiana,* i. p. 225. tab. 18.
Pygocentrus niger, *Müll. & Trosch. Hor. Ichth.* i. p. 21. tab. 2. fig. 3 (dentition); *Cuv. & Val.* xxii. p. 286.

D. 18. A. 33–35. L. lat. 105.

The height of the body is contained twice and one-ninth in the total length (the caudal included); snout very obtuse, short; the width of the interorbital space is only a little less than one-half of the length of the head. The second infraorbital bone touches the præopercular limb. Abdominal serrature composed of forty spinous plates. Gill-rakers of the outer branchial arch very short and broad.

Guiana.

6. Serrasalmo nattereri.

Kner, Denkschr. Acad. Wiss. Wien, 1860, xviii. p. 36. taf. 3. fig. 8.

D. 16–18. A. 27–30.

The height of the body is nearly one-half of the total length (without caudal); snout very obtuse and short; the width of the interorbital space is a little more than one-half of the length of the head. The second infraorbital bone nearly touches the præopercular limb. The origin of the dorsal fin is considerably nearer to the root of the caudal fin than to the end of the snout. Abdominal serrature composed of from twenty-two to twenty-five spinous plates. Gill-rakers of the outer branchial arch elongate, hooklike. (*Kner.*)

Matogrosso and Cujaba.

*** A more or less complete series of teeth on each side of the palate: *Serrasalmo,* Lacép.

7. Serrasalmo rhombeus.

Salmo rhombeus, *L. Syst. Nat.* i. p. 514; *Bloch,* taf. 383; *Bl. Schn.* p. 404; *Pall. Spicil. Zool.* fasc. viii. p. 57. tab. 5. fig. 3.
Serrasalmo rhombeus, *Lacép.* v. p. 284; *Cuv. Mém. Mus.* v. p. 367; *Cuv. & Val.* xxii. p. 272; *Casteln. Anim. Amér. Sud, Poiss.* pl. 37. fig. 3 (bad).

D. 18. A. 34. V. 7. L. lat. 100.

The height of the body is one-half or somewhat less than one-half of the total length (without caudal), the length of the head one-third; snout subconical, much longer than the eye. The second infraorbital is nearly as high as long, and more or less in contact with the præopercular limb. Abdominal serrature composed of from twenty-nine to thirty spinous plates. Gill-rakers of the outer branchial arch very short, terminating in a small point. Body with small blackish spots; an indistinct blackish blotch behind the gill-opening; caudal fin with the posterior margin black.

Guianas, Brazil.

a. Fine specimen. Essequibo. Purchased of Mr. Ehrhardt.
b–c. Adult. Surinam. From the Stuttgart Museum.
d. Half-grown. Surinam. Purchased of Mr. Frank.
e. Adult: stuffed. Demerara. Purchased of Mr. Scrivener.

8. **Serrasalmo marginatus.**

Valenc. in D'Orb. Voy. Amér. Mérid. Poiss. pl. 10. fig. 1; *Cuv. & Val.* xxii. p. 277; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 40.

D. 17. A. 34–36. V. 7.

The height of the body is contained once and three-fourths in the total length (without caudal), the length of the head thrice; snout rather pointed. The second infraorbital is separated from the præopercular limb by a narrow strip of naked skin. Abdominal serrature composed of from twenty-six to thirty-two spinous plates. Caudal fin without black margin; anal black-edged.

Brazil.

9. **Serrasalmo spilopleura.**

? Serrasalmo aureus, *Spix, Pisc. Brasil.* p. 72. tab. 29; *Cuv. & Val.* xxii. p. 282; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 43.

Serrasalmo spilopleura, *Kner, l. c.* taf. 5. fig. 11.

D. 16. A. 33. V. 7. L. lat. 95.

The height of the body is contained once and two-thirds in the total length (without caudal), the length of the head thrice and one-third; snout obtuse, much longer than the eye. The second infraorbital is subtriangular, nearly as high as long, and separated from the præopercular limb by a narrow strip of skin. Abdominal serrature composed of from thirty-two to thirty-three spinous plates. Gill-rakers of the outer branchial arch short. An indistinct blackish blotch behind the gill-opening; caudal fin with a black transverse marginal band and with a whitish hinder edge.

Brazil.

a. Adult. From the Haslar Collection.
b. Young. River Capin. Purchased of Mr. Stevens.

10. **Serrasalmo humeralis.**

Cuv. & Val. xxii. p. 279; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 38. taf. 4. fig. 9.

D. 16. A. 33–34. V. 7.

The height of the body is contained once and five-sixths in the total length (without caudal), the length of the head thrice. The second infraorbital is considerably longer than high, and separated from the præopercular limb by a strip of naked skin. Abdominal serrature composed of from twenty-six to twenty-eight spinous plates. Body with round blackish spots; a large blackish blotch behind the gill-opening; caudal with the margin black.

Brazil.

11. Serrasalmo gymnogenys.

? Serrasalmus humeralis, *Casteln. Anim. Amér. Sud, Poiss.* pl. 37. fig. 2 *

D. 16. A. 33–36. V. 7. L. lat. 95.

The height of the body is contained once and two-thirds in the total length (without caudal), the length of the head thrice and one-half; the abdominal profile is very convex, the upper profile of the head, above the eyes, concave. Snout obtuse, the length of the upper jaw, before the eye, being equal to that of the orbit. The second infraorbital is longer than high, and separated from the præopercular limb by a broadish strip of naked skin, which is half as wide as the infraorbital itself. The origin of the dorsal fin is midway between the extremity of the snout and the posterior end of the lateral line. Pectoral extending to the root of the ventral. Abdominal serrature composed of thirty or thirty-one spinous plates. Gill-rakers short, lanceolate. Body with small blackish spots; an indistinct blackish blotch behind the gill-opening; caudal fin dark on its base, with a light posterior margin.

Brazil, Guiana.

a–b. Adult (8 inches long) and young. River Capin. Purchased of Mr. Stevens.

c. Adult. British Guiana. Presented by Sir R. Schomburgk.

12. Serrasalmo maculatus.

Kner, Denkschr. Acad. Wiss. Wien, 1860, xviii. p. 41. taf. 4. fig. 10.

D. 15–16. A. 32–36. V. 6–7.

The height of the body is contained once and four-fifths in the total length (without caudal), the length of the head thrice and one-fourth; snout obtuse, longer than the eye. The second infraorbital bone is separated from the præopercular limb by a narrow strip of skin. Abdominal serrature composed of from twenty-nine to thirty-three spinous plates. Body with rounded blackish spots; an indistinct blackish blotch behind the gill-opening; caudal and anal fins with the margin black, without white edge. (*Kner.*)

Rio Guaporé.

13. Serrasalmo elongatus.

Kner, Denkschr. Acad. Wiss. Wien, 1860, xviii. p. 44. taf. 5. fig. 12.

D. 15. A. 32–33. V. 7.

The height of the body is contained twice and two-thirds in the total length (without caudal), the length of the head thrice and one-fifth; snout pointed. The second infraorbital bone is longer than high, and separated from the præopercular limb by a narrow strip of skin. Abdominal serrature composed of from thirty-two to thirty-five spinous plates. An indistinct roundish blackish blotch on the commencement of the lateral line; lower parts of the body with numerous small, round, light dots. (*Kner.*)

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* It is not improbable that Castelnau has figured a species different from the *S. humeralis* of Valenciennes; the latter describes the caudal fin as broadly edged with black, whilst in the figure given by Castelnau this fin has a light margin, as in *S. gymnogenys*. At all events it is almost certain that the two fishes figured by Kner and Castelnau under the name of *S. humeralis*, belong to two distinct species.

Rio Guaporé.

46. MYLETES*.

Myletes, sp., *Cuv. Mém. Mus.* iv. p. 444.
Myletes et Myleus, *Müll. & Trosch. Hor. Ichth.* i. pp. 22, 24.
Myletes, Tometes, et Myleus, *Cuv. & Val.*

Dorsal fin rather elongate, placed behind the middle of the length of the body, between ventrals and anal; anal long. Head and body compressed, elevated, covered with very small scales; belly keeled, serrated. Cleft of the mouth rather narrow: teeth large, compressed, with a more or less oblique cutting edge; those of the intermaxillary are in a double series, those of the mandible in a single, but there is a pair of conical teeth in the middle behind the front series of cutting teeth; maxillary without teeth. Gill-openings very wide.

Continental tropical America, east of the Andes.

The species may be referred to two groups:—

* The posterior series of intermaxillary teeth separated from the anterior by an interspace: *Myletes*, M. & T., p. 373.

** Both series of intermaxillary teeth close together: *Myleus*†, M. & T., p. 377.

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* 1. Myletes acanthogaster. *Cuv. & Val.* xxii. p. 209.—Lake of Maracaïbo.
2. —— lobatus, *Cuv. & Val.* xxii. p. 212.—River Amazons.
3. Tetragonopterus schomburgkii, *Jardine, in Schomb. Fish. Guian.* i. p. 243. pl. 22; Myletes schomburgkii, *M. & T. Hor. Ichth.* p. 37; *C. & V.* xxii. p. 212.—Guianas.
4. Palometa du haut Orénoque, *Humb. Observ. Zool.* ii. p. 177.—Myletes palometa, *C. & V.* xxii. p. 214.—Orinoco.
5. Myletes luna, *C. & V.* xxii. p. 221.—Cayenne.
6. —— rhomboidalis, *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 22 (not synon.).—Rio Parana.
7. Tometes unilobatus, *C. & V.* xxii. p. 229.—Cayenne.
8. Myletes bidens, *C. & V.* xxii. p. 201; *Casteln. Anim. Amér. Sud, Poiss.* p. 68. pl. 35 (skull) (not *Spix*).—Rio Paraguay.
9. —— torquatus, *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 24. taf. 1. fig. 4.—Rio Branco.

† Kner has shown that the character on which Müller and Troschel have founded the genus *Myleus*, viz. the absence of conical posterior mandibulary teeth, is so far from being constant, that it appears rather to have been an accidentally or temporarily abnormal state of the specimens examined by them.

* The posterior series of intermaxillary teeth separated from the anterior by an interspace.

1. Myletes asterias.

Müll. & Trosch. Hor. Ichth. i. p. 36. taf. 10. fig. 2; *Cuv. & Val.* xxii. p. 217.

D. 29–31. A. 39–40. V. 8.

The height of the body is contained once and two-thirds in the total length (without caudal), the length of the head thrice and four-fifths. Abdominal serrature composed of from thirty-six to thirty-eight simple spinous plates. Anterior dorsal rays not prolonged; the third anal ray very long and strong, cartilaginous, the other rays gradually decreasing in length. Adipose fin short. Gill-rakers of the outer branchial arch lanceolate, but rather short. Body with more or less distinct round orange-coloured spots.

Guiana.

a–b. Two of the typical specimens. British Guiana. Presented by Sir R. Schomburgk.
c–d. Fine specimens. Essequibo. From Mr. Ehrhardt's Collection.

2. Myletes rubripinnis.

Müll. & Trosch. Hor. Ichth. i. p 38. taf. 9. fig. 3.

D. 26–27. A. 38–42. V 7–8.

The height of the body is contained once and two-fifths in the total length (without caudal), the length of the head thrice and two-thirds. Abdominal serrature composed of from thirty-three to thirty-six simple spinous plates. Anterior dorsal rays not prolonged; the third anal ray long and strong, cartilaginous, the other rays gradually decreasing in length. Adipose fin short. Gill-rakers of the outer branchial arch lanceolate, but rather short. Coloration uniform; anal fin red anteriorly, with a broad black margin.

Essequibo.

a. One of the typical specimens. Presented by Sir R. Schomburgk.
b–c. Fine specimens. From Mr. Ehrhardt's Collection.

This species is very distinct from *M. asterias*, and may be readily recognized by the number of dorsal rays and by its more elevated body.

3. Myletes rhomboidalis.

Myletes rhomboidalis, *Cuv. Mém. Mus.* iv. p. 449. pl. 22. fig. 3; *Cuv. & Val.* xxii. p. 210.
Tetragonopterus latus, *Schomb. Fish. Guian.* i. p. 241.
Myletes latus, *Müll. & Trosch. Hor. Ichth.* i. p. 37.

D. 23. A. 33–36. V. 9. L. lat. 105.

The height of the body is two-thirds of the total length (without caudal), the length of the head two-sevenths. Abdominal serrature composed of from thirty-two to thirty-six spinous plates. The length of the adipose fin is equal to, or nearly equal to, its distance from the dorsal fin. Anterior dorsal rays rather prolonged; anterior anal rays produced into a lobe, the other rays gradually decreasing in length. Gill-rakers of the outer branchial arch lanceolate. Coloration uniform.

Brazil, Guianas.

a. Fine specimen. Essequibo. From Mr. Ehrhardt's Collection.
b. Young. Guiana. Purchased of Mr. Frank.

4. **Myletes parma.**

D. 23–24. A. 38. V. 7–8.

The height of the body is three-fourths of the total length (without caudal), the length of the head one-fourth. The upper and lower profiles strongly arched, subsemicircular. Snout obtuse, as long as the diameter of the eye, which is one-third of the length of the head, and two-thirds of the width of the interorbital space. Dentition as normally in this genus. The naked space on the cheek is as high as the second infraorbital bone. The abdominal serrature is composed of thirty-six simple spinous plates, the spines being rather prominent. Anterior part of the dorsal fin rather high; it commences a little nearer to the extremity of the snout than to the end of the lateral line, and the length of its base is exactly one-third of the total (without caudal). Adipose fin well developed, its length being more than one-half of its distance from the dorsal fin. Anal fin with the third ray strong, cartilaginous, not quite as long as the head; the middle and the hinder portion of this fin are rather low, the margin being nearly straight. Caudal fin emarginate, with the lobes pointed. Gill-rakers of the outer branchial arch lanceolate, of moderate length. Coloration uniform; vertical fins with a broad blackish margin.

Para.

a–b. Eight inches long. River Capin. Purchased of Mr. Stevens.

5. **Myletes macropomus.**

Cuv. Mém. Mus. iv. p. 453. pl. 21. fig. 3: *Cuv. & Val.* xxii. p. 195; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 20.

B. 5. D. 16. A. 25. V. 8. L. lat. 80.

The height of the body is one-third of the total length (with the caudal), the length of the head one-fourth. None of the fin-rays prolonged; adipose fin small, rayed. Operculum large, its width being contained only once and two-thirds in its depth. The infraorbital ring covers the cheek entirely. Coloration uniform.

Brazil.

6. **Myletes brachypomus.**

Myletes brachypomus, *Cuv. Mém. Mus.* iv. p. 452. pl. 22. fig. 1; *Cuv. & Val.* xxii. p. 199; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 21.

? Myletes pacu, *Humb. Observ. Zool.* ii. p. 175. pl. 47. fig. 2 (very bad).

B. 5. D. 16. A. 26. V. 8. L. lat. 105.

The height of the body is one-third of the total length (the caudal included), the length of the head one-fifth; operculum about thrice as high as long; infraorbital ring separated from the præopercular limb by a strip of naked skin. Adipose fin short, rayed; none of the fin-rays are prolonged.

Brazil.

7. **Myletes orbignyanus.**

Cuv. & Val. xxii. p. 220.

D. 14. A. 32.

Body elevated, with the lower profile subsemicircular; upper profile of the head concave above the eyes. Anal fin not very high, without lobe in the middle. Scales very small. (*Val.*)

Parana.

8. **Myletes duriventris.**

Myletes duriventris, *Cuv. Mém. Mus.* iv. p. 451. pl. 22. fig. 2; *Cuv. & Val.* xxii. p. 206; *Casteln. Anim. Amér. Sud, Poiss.* pl. 34. fig. 2; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 21.
Tetragonopterus aureus, *Spix, Pisc. Bras.* tab. 31.
Myletes aureus, *Agass. in Spix, Pisc. Bras.* p. 74.

D. 15. A. 33. V. 8. L. lat. 150.

The height of the body is contained once and five-sixths in the total length (with the caudal), the length of the head five times. Abdominal serrature composed of thirty-nine simple spinous plates. Dorsal rays not prolonged; the rays towards the posterior third of the anal fin are longer than the others, forming an obtuse lobe. Adipose fin short. The infraorbital ring is separated from the præopercular limb by a strip of naked skin.

Brazil.

9. **Myletes bidens.**

Spix, Pisc. Bras. p. 75. tab. 32.

D. 16–17. A. 26–28. V. 9. L. lat. 95.

The height of the body is contained once and three-fourths in the total length (without caudal), the length of the head thrice and one-sixth; operculum thrice as high as long. Abdominal serrature composed of fifty-four spinous plates. Adipose fin very short. The outer profiles of the dorsal and anal fins convex. Coloration uniform.

Northern Brazil.

a. Half-grown. From the Collection of the Zoological Society.

10. **Myletes ellipticus.**

D. 27–29. A. 39. V. 7.

The height of the body is contained once and three-fifths in the total length (without caudal), the length of the head thrice and one-third or thrice and two-thirds. The upper and lower profiles are nearly equally curved, the outlines of the body forming an almost regular ellipse. Snout obtuse, rather shorter than the eye, the diameter of which is two-sevenths of the length of the head; the width of the interorbital space is not quite twice the diameter of the eye. Dentition as normally in this genus. The naked space on the cheek is higher than the second infraorbital bone. The abdominal serrature is composed of from forty-one to fifty-one closely-set spinous plates. Dorsal fin with the anterior rays not prolonged; it commences midway between the extremity of the snout and the end of the lateral line, and the length of its base is a little more than one-third of the total (without caudal). Adipose fin very short, its length being only one-half of its distance from the dorsal fin. Anal fin obtusely bilobate: the third ray is rather broad, cartilaginous, and about half as long as the head; the point of the second lobe corresponds to about the twenty-first ray. Caudal slightly emarginate. Gill-rakers of the outer branchial arch short, lanceolate. Coloration uniform, or body with scattered round rose-coloured spots.

British Guiana.

a. Nine and a half inches long. Presented by Sir R. Schomburgk.
b. Fine specimen. Essequibo. From Mr. Ehrhardt's Collection.

11. Myletes divaricatus.

Cuv. & Val. xxii. p. 215; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 23.

D. 23. A. 33.

Rays of the dorsal fin produced into filaments; anal fin bilobed, the second lobe being formed by the prolongation of the fourteenth to twenty-fourth rays. (The anal rays are bifid at their extremity, one part being bent outwards to the right-hand side, the other to the left *.) (*Val.*)

Essequibo.

12. Myletes hypsauchen.

Müll. & Trosch. Hor. Ichth. i. p. 38. tab. 10. fig. 1; *Cuv. & Val.* xxii. p. 219; *Kner, Denkschr. Acad. Wiss. Wien,* 1860, xviii. p. 26.

D. 19. A. 39–43. V. 7.

The height of the body is four-fifths of the total length (without caudal), the length of the head one-fourth. Abdominal serrature composed of twenty-nine or thirty spinous plates. Anterior dorsal rays rather high; anal fin with the margin undulated, its anterior rays not prolonged. Adipose fin long, the length of its base being three-fourths of that of the dorsal fin. Gill-rakers of the outer branchial arch long, setiform. Coloration uniform.

Essequibo River.

a. One of the typical specimens. Presented by Sir R. Schomburgk.
b. Half-grown. From the Collection of the Zoological Society.

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* It is probable that this peculiarity is found only in some individuals.

13. **Myletes maculatus.**

Kner, Denkschr. Acad. Wiss. Wien, 1860, xviii. p. 26. taf. 2. fig. 5.

D. 17–18. A. 37–39. V. 7.

The height of the body is three-fourths of the total length (without caudal), the length of the head a little more than one-fourth. Abdominal serrature composed of from thirty-three to thirty-five spinous plates. Anterior dorsal rays rather high; none of the anal rays produced. Adipose fin rather long, its length being more than one-half of that of the base of the dorsal fin. A large black spot behind the shoulder; body with rounded dark spots; anal and caudal fins with blackish margins. (*Kner.*)

Rio Guaporé.

** Both series of intermaxillary teeth close together.

14. **Myletes altipinnis.**

Tometes altipinnis, *Cuv. & Val.* xxii. p. 230. pl. 643.

D. 24–25. A. 38. V. 8.

The height of the body is one-half of the total length (without caudal), the length of the head nearly one-fifth. Abdominal serrature composed of fifty spinous plates. The posterior dorsal rays are rather longer than the middle ones. The sixteen anterior anal rays rather long. Adipose fin small. Coloration uniform.

San Francisco, Rio Cipo.

a. Twenty inches long: skin. Rio Cipo. Presented by Ch. Cumberland, Esq.

15. **Myletes discoideus.**

Kner, Denkschr. Acad. Wiss. Wien, 1860, xviii. p. 30.

D. 23. A. 34. V. 8.

The height of the body is one-half of the total length (the caudal included), the length of the head rather less than one-fourth. Abdominal serrature composed of twenty-seven spinous plates. None of the dorsal rays prolonged; only the seven or eight first branched anal rays are produced into a lobe, the others being short and subequal in length. Adipose fin well developed. Sides with small brown spots. (*Kner.*)

Brazil.

16. **Myletes trilobatus.**

Tometes trilobatus, *Cuv. & Val.* xxii. p. 226.

D. 23. A. 39. V. 8. L. lat. 90.

The length of the head is one-half of the height of the body, which is two-fifths of the total length (with the caudal). Abdominal serrature composed of twenty-eight simple spinous plates. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal fin. Anal fin with a lobe formed by its middle rays. (*Val.*)

Cayenne.

17. Myletes setiger.

Myleus setiger, *Müll. & Trosch. Hor. Ichth.* i. p. 39. taf. 11. fig. 1.
Myletes doidyxodon, *Cuv. & Val.* xxii. p. 222; *Casteln. Anim. Amér. Sud, Poiss.* pl. 34. fig. 1 (bad).
—— setiger, *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. taf. 2. fig. 6.

D. 21–22. A. 36–39. V. 8.

The height of the body is contained once and two-thirds in the total length (without caudal), or twice (the caudal included); the length of the head is one-fourth of the total (without caudal). Abdominal serrature composed of from twenty-eight to thirty-three simple spinous plates. Anterior dorsal rays filiform; anal bilobed, the point of the second lobe corresponding to the sixteenth ray. Adipose fin small. Gill-rakers of the outer branchial arch short, lanceolate. Coloration uniform.

Guianas.

a. Adult. British Guiana. Presented by Sir R. Schomburgk.—One of the typical specimens.
b. Adult: skin. British Guiana.

18. Myletes oligacanthus.

Myleus oligacanthus, *Müll. & Trosch. Hor. Ichth.* i. p. 40. taf. 8. fig. 4 (young).

D. 18–19. A. 36–37. V. 9.

The height of the body is rather less than one-half of the total length (without caudal), the length of the head somewhat less than one-fourth. There are no prominent spines in front of the ventral, but there is a series of eight or nine strong ones between ventral and vent. Dorsal fin elevated anteriorly. Anal bilobed; the second lobe is short, and its point is formed by the twenty-seventh ray. Adipose fin small. Gill-rakers of the outer branchial arch soft, filamentous. Scales extremely small. Coloration uniform.

Guianas.

a–d. From 7 to 8 inches long: skins. Demerara. Purchased of Mr. Scrivener.

I have no doubt that our specimens are specifically identical with that described by Müller and Troschel, although they do not mention the second posterior lobe of the anal fin. The absence of this lobe, which, moreover, is short, may be accounted for by the youth of the specimen in the Berlin Museum. Whether the posterior mandibulary teeth are really absent, or whether they have been only overlooked as in *M. setiger*, I cannot say, as the greater part of the dentition of our specimens has been taken off by the knife of the collector.

47. CATOPRION.

Catoprion, *Müll. & Trosch. Hor. Ichth.* i. p. 22.

Dorsal fin rather elongate, placed somewhat behind the middle of the length of the body, between ventrals and anal; anal long. Head and body compressed, elevated, covered with very small scales; belly keeled, serrated. Cleft of the mouth of moderate width: teeth of the intermaxillary conical, in a double series; those of the mandible triangular, cutting, in a simple series; palatine teeth none. Gill-openings very wide; gill-rakers of the outer branchial arch long.

Guiana; Brazil.

1. Catoprion mento.

Serrasalmo mento, *Cuv. Mém. Mus.* v. p. 369. pl. 28. fig. 3.

Catoprion mento, *Müll. & Trosch. Hor. Ichth.* i. p. 22. tab. 2. fig. 5; *Cuv. & Val.* xxii. p. 304; *Kner, Denkschr. Acad. Wiss. Wien*, 1860, xviii. p. 34.

B. 4. D. 16. A. 36–40. V. 7.

The height of the body is one-half of the total length (the caudal included), the length of the head two-ninths; cleft of the mouth directed upwards, chin prominent; the second infraorbital covers the cheek nearly entirely. Abdominal serrature composed of thirty-three or thirty-four simple osseous plates. Adipose fin well developed. Anterior rays of the dorsal and anal fins prolonged. A blackish blotch behind the shoulder; the long anal ray white.

Guiana; Brazil.

Appendix to the Family of Characinoids.

1. De Joannis has described and figured a small fish from the Nile, which is evidently distinct from all the other known species of tropical Africa. His description is sufficiently detailed to ensure the identification of the fish when it shall be rediscovered; but it does not contain those characters whereby its systematic position can be fixed, and therefore we prefer to subjoin an abstract of the original description, to the doubtful merit of giving a generic name to a species, to the knowledge of which we are not able to add anything.

Coregonus niloticus, Joannis, in Guér. Mag. Zool. 1835.—" La tête de cette jolie petite espece est à peu près le cinquième de la longueur du corps. Bouche petite et un peu proboscidiforme; elle est fort peu fendue; la lèvre superieure est un peu plus longue que l'inférieure; la tête est de forme conique; les dents sont nulles; les ouïes sont assez ouvertes; l'œil touche presque le sommet de la tête. Corps fusiforme, chair transparente; la courbure du dos est très faible, et la ligne inférieure tout-à-fait droite jusqu'au dessous de l'ouverture operculaire, où elle devient courbe, et se relève pour former la partie inférieure de la tête. Le rapport de la hauteur la plus grande du

corps à sa longueur est comme 1 est à 6; l'anus est à peu près au milieu de la longueur du corps, et environ à égale distance des ventrales et de l'anale. Écailles très fines. Ventrales de neuf rayons; le troisième est le plus long: ces nageoires sont sous le ventre et opposées à la dorsale antérieure. Dorsale antérieure de treize rayons; le troisième est le plus long: cette nageoire est triangulaire, transparente, et insérée à un peu plus du tiers de la longueur totale, à partir du bout du museau. L'anale a dix rayons, le troisième et le quatrième étant égaux et le plus longs; elle est à une distance de l'anus égale à la distance qui sépare ce dernier des ventrales. La couleur du corps est d'un gris jaunâtre; le ventre argenté, ainsi que les joues. Le dessus et la base de la tête sont d'un rouge fauve. On voit dix losanges verdâtres à cheval sur le dos, et six taches quadrilatères sur le milieu de chaque côté, réparties depuis la dorsale jusqu'au bout de la queue, et de même couleur que les losanges. Ce petit poisson, qui passe pour délicieux à manger, ce dont on ne peut guère juger, à cause de sa petitesse, se prend sur les rivages avec les autres petites espèces. Il n'est pas très commun. C'est à Thèbes que je me le suis procuré; on le prend l'hiver surtout. Les Arabes le nomment *Samak-el-maleh*.

"La longueur de l'individu observé est de deux pouces."

2. Baird and Girard describe a species from Texas, which is said to be the type of a new genus (*Astyanax argentatus*). In the first description (Proc. Acad. Nat. Sc. Philad. vii. p. 27) the teeth are said to be in a double series above and below, whilst afterwards (U. S. & Mex. Bound. Surv. Ichth. p. 74. pl. 8. figs. 5–9) the dentition of the lower jaw is not mentioned. We are also left in doubt as to whether the belly is compressed or rounded. It is not improbable that this fish is only a species of *Tetragonopterus*.

Fam. 3. HAPLOCHITONIDÆ.

Body naked or scaly. Margin of the upper jaw formed by the intermaxillary; opercular apparatus complete. Barbels none. Gill-opening wide; pseudobranchiæ well developed. Air-bladder simple. Adipose fin present. Ovaries laminated; the eggs fall into the cavity of the abdomen, there being no oviduct. Pyloric appendages none.

Freshwater fish from the temperate parts of South America and South Australia, representing the Salmonoids of the northern hemisphere.

Only two genera are known, which, perhaps, will become the types of two distinct groups when we shall be better acquainted with the Australian form.

Body naked	1. Haplochiton, p. 381.
Body scaly	2. Prototroctes, p. 382.

1. HAPLOCHITON.

Aplochiton, *Jenyns, Voy. Beagle, Fish.* p. 130.
Farionella, *Cuv. & Val.* xxii. p. 507.

This genus has the general habit of the Trout, but is completely naked. The dorsal fin occupies a position somewhat posterior to that of the ventrals, which are in the middle of the length of the body, and composed of seven rays. Adipose fin small; caudal forked; anal of moderate length. The nostrils are somewhat remote from each other. Eye of moderate size. Teeth small, curved, in a single series, in the upper and lower jaw and on the palatine bones. Tongue broad, with a series of curved teeth on each side. Gill-openings rather wide, the gill-membranes not attached to the isthmus; the outer branchial arch with lanceolate gill-rakers. Pseudobranchiæ well developed. Air-bladder simple, grown to the walls of the abdomen. Stomach thick and muscular; pyloric appendages none. The urogenital orifice of both sexes is produced into a cylindrical tube, which lies concealed in a groove before the anal fin.

Tierra del Fuego and Falkland Islands.

1. Haplochiton zebra.

Aplochiton zebra, *Jenyns, Voy. Beagle, Fish.* p. 131. pl. 24. fig. 1.
Farionella gayii, *Cuv. & Val.* xxii. p. 508. pl. 649 (not good).

B. 3. D. 12–13. A. 15–16. V. 7. Vert. 45/22.

The height of the body is somewhat more than one-fifth of the total length (without caudal), the length of the head is contained in it four times and one-third. Snout longer than the eye, its extent being equal to the width of the interorbital space. Jaws equal in length anteriorly; the cleft of the mouth extends somewhat behind the anterior margin of the orbit. Brownish yellow, with numerous brown dots and vertical stripes.

Tierra del Fuego and Falkland Islands.

a. Adult. Port Louis (Cape Horn). Presented by Sir John Richardson.

b, *c–d*. Adult and half-grown. From the Haslar Collection.

e–f. Adult. Presented by the Royal College of Surgeons.

2. Haplochiton tæniatus.

Aplochiton tæniatus, *Jenyns, Voy. Beagle, Fish.* p. 132. pl. 24. fig. 2.

B. 3. D. 12. A. 15. V. 7.

The height of the body is one-fifth or one-sixth of the total length (without caudal), the length of the head rather more than one-fifth. Snout longer than the eye. Cleft of the mouth extending behind the anterior margin of the orbit. Lower jaw rather longer than the upper. Uniform greenish, with a pale silvery band along the middle of the side of the body.

Tierra del Fuego.

a. One of the typical specimens. Goree Sound.

2. PROTOTROCTES.

This genus has the general habit of a *Coregonus*; however, the scales on the front part of the body are rather irregularly arranged in series descending obliquely forward. The dorsal fin occupies a position somewhat posterior to that of the ventrals, which are in the middle of the length of the body, and composed of seven rays. Adipose fin small; caudal emarginate; anal of moderate length. Eye of moderate size. Teeth minute, in a single series in the jaws, on the vomer, and on the palatine bones. Gill-openings rather wide, the gill-membranes not attached to the isthmus. Branchiostegals six.

Southern Australia.

1. Prototroctes maræna.

B. 6. D. 10. A. 19. P. 13. V. 7. L. lat. 78. L. transv. 19.

The body of this singular fish is compressed, its height being about one-fourth of the total length (without caudal); the belly appears to have been strongly compressed, as the scales of one side do not extend on to the other, leaving a naked groove along the entire median line from the ventrals to the anal. The head is remarkably small, its length being one-sixth of the total without caudal; it terminates in a conical snout, with the upper jaw longest; the snout is rather longer than the diameter of the eye, which is one-fourth of the length of the head, and equal to the width of the convex interorbital space. The cleft of the mouth extends to below the anterior margin of the orbit; the intermaxillary and maxillary are very solid bones, firmly adherent to each other, and extending equally far backwards. The intermaxillary alone is toothed, the minute teeth forming a single series; a similar series of teeth runs across the vomer and along each palatine bone. The cheek and the opercular apparatus are naked. Operculum quadrangular, as long as deep; suboperculum well developed; interoperculum hidden beneath the præoperculum. Branchiostegals rather broad and short. The origin of the dorsal fin is exactly midway between the end of the snout and the end of the caudal, and its base corresponds to the middle of the interspace between the anal and ventrals; it is rather higher than long. Anal considerably longer than high. Caudal emarginate, with the lobes equal in length, somewhat shorter than the head. The pectorals are rather longer than the ventrals, two-thirds of the length of the head. The scales are of moderate size, but rather irregularly arranged, thin, and cycloid; there is no lateral line. Back greenish olive; sides and belly silvery.

Southern Australia.

a. Ten and a half inches long. From the International Exhibition, 1862.

Fam. 4. STERNOPTYCHIDÆ.

Scopelini, part., *Müll. Berl. Abhandl.* 1844, p. 184.

Body naked or with very thin, deciduous scales; barbels none. Margin of the upper jaw formed by the maxillary and intermaxillary, both of which are toothed; opercular apparatus not completely developed. Gill-opening very wide; pseudobranchiæ absent or present; air-bladder simple, if present. Adipose fin present, but generally rudimentary. Series of phosphorescent bodies along the lower parts. The eggs are enclosed in the sacs of the ovarium, and excluded by oviducts.

Pelagic or deep-sea fishes from the Mediterranean and Atlantic.

I divide the fishes of this family into the following groups and genera:—

A. Body without scales; pseudobranchiæ present; a rudimentary spinous dorsal fin: *Sternoptychina.*

Teeth in the jaws in a single series.............. 1. Argyropelecus, p. 384.
Teeth in the jaws in several series .... 2. Sternoptyx, p. 386.

B. Body without scales; pseudobranchiæ present; no rudimentary spinous dorsal: *Cocciina.*

The entire lower jaw is received between the dilated maxillary bones. 3. Coccia, p. 387.
Lower jaw rather prominent .... 4. Maurolicus, p. 388.

C. Body with deciduous scales; pseudobranchiæ none: *Chauliodontina.*

Dorsal fin opposite the anal .... 5. Gonostoma, p. 391.
Dorsal fin before the ventrals .... 6. Chauliodus, p. 392.

First Group. STERNOPTYCHINA.

Sternoptychoids with the body scaleless, with pseudobranchiæ and a rudimentary spinous dorsal fin.

1. ARGYROPELECUS.

Argyropelecus, *Cocco*; *Cuv. & Val.* xxii. p. 392.
Pleurothysis, *Lowe, Fish. Madeira,* p. 64.

Trunk much elevated and compressed, passing abruptly into the tail, which is narrow: body covered with a silvery pigment, without regular scales; series of luminous (phosphorescent) spots run along the lower side of the head, body, and tail. Head large, compressed, and elevated, with the bones thin, but ossified. Cleft of the mouth wide, vertical, with the lower jaw prominent. The margin of the upper jaw is formed by the intermaxillary and maxillary*, both these bones having a sharp edge, which is beset with a single series of minute teeth; lower jaw and palatine bones with a series of small curved teeth. Eyes rather large, and, although lateral, directed upwards and very close together. Pectorals well developed; ventrals very small. The humeral arch and the pubic bones are prolonged into flat pointed processes, which project in the median line of the belly; a series of imbricate scutes runs from the humeral to the pubic spine, forming a sort of serrature along the belly. The dorsal fin is short, and occupies about the middle of the length of the fish; it is preceded by the first commencement of the formation of a spinous dorsal, several neural spines being prolonged beyond the muscles, forming a triangular osseous plate. Adipose fin rudimentary; anal fin short; caudal forked. Gill-opening very wide, the outer branchial arch extending forward to behind the symphysis of the lower jaw, and beset with very long gill-rakers; branchiostegals nine; pseudobranchiæ present; air-bladder present. Pyloric appendages four.

Mediterranean and Atlantic.

1. Argyropelecus hemigymnus.

Argyropelecus hemigymnus, *Cocco, in Giorn. Sc. Sic.* 1829, fasc. 77. p. 146; *Bonap. Faun. Ital. Pesc.* text; *Cuv. & Val.* xxii. p. 398.
Sternoptyx mediterranea, *Cocco, in Giorn. il Faro*, 1838, iv. p. 7. fig. 2; *Bonap. Faun. Ital. Pesc.* fig.
—— hemigymnus, *Valenc. in Cuv. Règne Anim. Ill. Poiss.* pl. 103. fig. 3.

B. 9. D. 7–8. A. 11. P. 9. V. 5.

The height of the body equals the distance between the gill-opening and the root of the caudal; tail slender; posterior corner of the mandible and angle of the præoperculum, each with a small triangular spine; tail without spines. The pectoral fin extends nearly to the origin of the anal.

Mediterranean and Atlantic.

a–b, c–f. Two inches long. Messina.
g, h–i. One inch and a half long. Mediterranean.
k. Many specimens.

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* Valenciennes's descriptions are rather confused as regards the relative length of the intermaxillary of these fishes: at p. 394 he compares the upper jaw of the Mediterranean species (*A. hemigymnus*) with that of *Gonostoma* on account of the *long* intermaxillaries, whilst in reality *Gonostoma* is distinguished by the shortness of these bones; and in the description of *A. hemigymnus* he calls the intermaxillaries *short*. In all these fishes the intermaxillaries taper into a fine fibrous point, and it is impossible to fix upon the exact spot where the bone ceases; the essential point is, that the maxillary is toothed in such a manner that its dentition is merely the continuation of that of the intermaxillary; whether the intermaxillary extends a little more or less downwards towards the commissure, is of very subordinate importance.

2. Argyropelecus olfersii.

Sternoptyx olfersii, *Cuv. Règne Anim.* 2nd edit. ii. p. 316. pl. 13. fig. 2; *Düben & Koren, in Vet. Acad. Handl.* 1844, p. 80. tab. 3. fig. 6.
Argyropelecus olfersii, *Cuv. & Val.* xxii. p. 408; *Lowe, Proc. Zool. Soc.* 1850. p. 247.

B. 9. D. 9. A. 11. P. 10. V. 6.

The height of the body is equal to, or rather less than, the distance between the shoulder and the root of the caudal fin; the tail at its base, below the end of the dorsal fin, is as high as long. Mandible with a short flat spine at its posterior corner; angle of the præoperculum with a spine directed downwards; tail without spines. The pectoral fin extends to the ventral.

Atlantic; coast of Norway.

3. Argyropelecus durvillii.

Cuv. & Val. xxii. p. 405.

B. 9. D. 9. A. 10. P. 10. V. 6.

The height of the body equals the distance between the gill-opening and the root of the caudal; tail much higher at its base than in *A. hemigymnus*; mandible without prominent spine at its posterior corner; angle of the præoperculum with a spine directed downwards; tail without spines. The pectoral fin does not extend to the hind margin of the trunk. (*Val.*)

Atlantic.

4. Argyropelecus aculeatus.

Cuv. & Val. xxii. p. 406*.

B. 9. D. 9. A. 14. P. 10. V. 7.

The height of the body equals the distance between the posterior margin of the præoperculum and the root of the caudal; tail very slender. Mandible with a very obtuse spine at its posterior corner; præoperculum with a spine directed downwards. A double row of spines along the lower side of the tail. (*Val.*)

Azores.

2. STERNOPTYX.

Sternoptyx, *Hermann*; *Cuv. & Val.* xxii. p. 412.

Trunk much elevated and compressed, with the contracted portion of the tail very short. The teeth in the jaws form several series, so that the largest teeth are in the inner row. In other respects this genus agrees with *Argyropelecus*.

Atlantic.

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* This is the same species which is named *A. acanthurus* on p. 408.

1. Sternoptyx diaphana.

Sternoptyx diaphana, *Hermann, in Naturforscher,* 1781, xvi. p. 8. taf. 1. figs. 1 & 2 (bad), and xvii. p. 249 (cop. by *Walbaum, Artedi,* iii. tab. 1. figs. 1 & 2; and by *Bl. Schn.* p. 494. pl. 35); *Cuv. Règne Anim.* 2nd edit. pl. 13. fig. 1; *Cuv. & Val.* xxii. p. 415; *Lowe, Proc. Zool. Soc.* 1843, p. 85.
—— hermanni, *Lacép.* v. p. 613.

B. 5. D. 9. A. 13. P. 10. V. 3?

The height of the body equals the distance between the extremity of the snout and the commencement of the tail; tail very short. Interorbital space slightly concave; the posterior limb of the præoperculum borders the hind part of the orbit, and descends in a very oblique line, terminating in two points. Pectoral fin scarcely reaching to the ventrals, which are very small.

Tropical parts of the Atlantic.

Second Group. COCCIINA.

Sternoptychoids with the body scaleless, with pseudobranchiæ, and without rudimentary spinous dorsal fin.

3. COCCIA.

Ichthyococcus*, sp., *Bonap. Faun. Ital. Pesc.*

Head and body strongly compressed, rather elevated, covered with a silvery pigment, there being no regular scales. Series of luminous (phosphorescent) spots run along the lower side of the head, body, and tail. Cleft of the mouth of moderate width, the entire lower jaw being received between the dilated maxillary bones, which form nearly the whole margin of the upper jaw; intermaxillaries very small; the maxillary has a sharp and minutely serrated edge; a few minute teeth near the symphysis of the lower jaw. Palate apparently toothless. Eye of moderate size, and, although lateral, directed upwards, the space between the eyes being an exceedingly narrow ridge. Pectorals and ventrals developed, the former quite at the lower side of the body. Dorsal fin nearly in the middle of the length of the body, above the ventrals; adipose fin rudimentary. Anal fin of moderate length. Caudal forked. Gill-opening very wide, the outer branchial arch extending forward to behind the symphysis of the lower jaw, and beset with very short gill-rakers; branchiostegals about ten; pseudobranchiæ present. Air-bladder none.

Mediterranean.

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* This word is formed to designate a fish dedicated to the memory of Cocco! Similar generic names, created and introduced by Bonaparte into the ornithological system, have always been considered as a nuisance, although ornithologists submitted to it. Fortunately they are not so frequent in Ichthyology that their rejection would be accompanied with inconvenience, and therefore I do not hesitate to substitute for it a name more in accordance with the rules of nomenclature.

1. Coccia ovata.

Gonostomus ovatus, *Cocco, Lett. s. Salmon.* p. 9. tab. 1. fig. 3.
Ichthyococcus ovatus, *Bonap. Faun. Ital. Pesc.* c. fig.
Scopelus ovatus, *Cuv. & Val.* xxii. p. 453.

D. 11. A. 12. P. 6. V. 6. Vert. 24/14.

The height of the body is contained twice and three-fourths in the total length (without caudal), the length of the head a little more than thrice. There are twenty-five phosphorescent spots in one of the series running from the chin to the base of the ventral; they appear as small pearl-coloured disks, each of which sits upon a black globular body.

Mediterranean.

a–d, *e–k*. From one to one inch and a half long. Messina.

The stomach consists of two elongate branches, one descending to the posterior third of the abdominal cavity, and the other reascending to the thoracic cavity. There is a very distinct contraction at the curvature where the upper portion passes into the lower. Three short pyloric appendages at the commencement of the intestinal tract, which makes only a few short bends, and terminates immediately before the origin of the anal fin. Testicles paired, extending nearly the whole length of the abdominal cavity.

The abdominal portion of the vertebral column is composed of twenty-four vertebræ, the caudal of fourteen, the former being not quite twice as long as the latter.

4. MAUROLICUS.

Maurolicus et Gonostomus, sp., *Cocco.*
Maurolicus et Ichthyococcus, sp., *Bonap.*

Body oblong, compressed, covered with a silvery pigment, there being no regular scales. Series of luminous (phosphorescent) spots run along the lower side of the head, body, and tail. Head compressed, with the bones thin, but ossified. Cleft of the mouth rather wide, obliquely ascending, with the lower jaw slightly prominent; the maxillary is large, broad, and much produced backwards, receiving the slender intermaxillary in the upper concave part of its margin; both these bones have a sharp edge, which is beset with a single series of minute teeth. Lower jaw with a few minute teeth. Teeth on the palate invisible. Eye of moderate size. Pectoral and ventral fins developed. Dorsal fin on the hinder half of the body, but before the anal; adipose fin rudimentary. Anal fin rather long, but the rays of its posterior half are so minute, and hidden in the skin and muscles, that it is extremely difficult to ascertain their true number. Caudal forked. Gill-opening very wide, the outer branchial arch extending forward to behind the symphysis of the lower jaw, and beset with very long gill-rakers. Branchiostegals eight or nine. Pseudobranchiæ well developed. Air-bladder none.

Mediterranean; North Atlantic.

Müller maintains that the structure of the jaws of this genus is truly Scopeloid, the intermaxillary reaching "to the angle of the mouth," and the maxillary being prolonged beyond it. It will be difficult to say where the angle of the mouth is situated in this genus, the lower jaw being received between the very broad lateral branches of the upper. However, when the mouth is opened to its full extent, it may be seen that the maxillary actually forms a part of the margin of the cleft of the mouth; it is toothed in the same manner as the intermaxillary, and the whole structure is the same as in many Clupeoids and as in *Gonostoma*, a fish which does not appear to have been known to Müller. Even some of the teeth of *Maurolicus* are a little larger than the others, reminding us of the canine teeth of *Gonostoma*.

The species may be referred to two divisions:—

α. Phosphorescent organs appearing as impressions in the skin, p. 389.

β. Phosphorescent organs slightly prominent, sitting on black globular bodies, p. 390.

α. Phosphorescent organs appearing as impressions in the skin.

1. Maurolicus borealis.

Argentine, *Pennant, Brit. Zool.* iii. p. 286. pl. 65. no. 156; *Low, Faun. Orcad.* p. 225.

Scopelus humboldtii, *Yarrell, Brit. Fish.* 1st ed. ii. p. 94, and 2nd ed. ii. p. 161; *Clarke, Mag. Nat. Hist.* 1838, January; *Dekay, Fauna New York, Fish.* p. 246. pl. 38. fig. 121 (very bad, probably copied from Yarrell).

—— borealis, *Nilss. Observ. Zool.* p. 9, and *Skand. Faun. Fisk.* p. 479; *Cuv. & Val.* xxii. p. 438.

—— pennantii, *Cuv. & Val.* xxii. p. 436; *Yarrell, Brit. Fish.* 3rd ed. i. p. 330.

Maurolicus mülleri, *Kröyer, Danmarks Fisk.* iii. p. 113.

D. 11–12. A. 10–12+18. V. 7.

The height of the body is contained four times and four-fifths in the total length (without caudal), the length of the head thrice and a half or thrice and two-thirds. The origin of the dorsal fin is considerably nearer to the root of the tail than to the extremity of the snout, above the base of the ventral; its last ray is in the vertical from the origin of the anal. The luminous spots appear as mere impressions, and do not sit upon a black globular body; there are twelve pairs between the throat and the ventral fins, without those of the isthmus.

North Atlantic.

a. Many specimens, from 1 to 2½ inches long. Redcar. Presented by the Rev. T. S. Rudd.

2. Maurolicus amethystino-punctatus.

Maurolicus amethystino-punctatus, *Cocco, Lett. s. Salmon.* p. 32. tab. 4. fig. 12; *Bonap. Faun. Ital. Pesc.* c. fig.
Scopelus maurolici, *Cuv. & Val.* xxii. p. 439.

D. 10. A. 10+12? V. 6.

The height of the body is one-fourth of the total length (without caudal), the length of the head one-third or a little less than one-third. The origin of the dorsal fin is considerably nearer to the root of the tail than to the extremity of the snout, immediately behind the base of the ventral; its last ray is in the vertical from the second or third anal ray. The luminous spots appear as mere impressions, and do not sit upon a black globular body; there are twelve pairs between the throat and the ventral fins, without those of the isthmus.

Mediterranean.

a. Two inches long. Mediterranean.

This species is extremely similar to *Maurolicus borealis,* but has the body comparatively shorter and the head longer.

β. Phosphorescent organs slightly prominent, sitting on black globular bodies.

3. Maurolicus poweriæ.

Gonostomus poweriæ, *Cocco, Lett. s. Salmon.* p. 7. tab. 2. fig. 2.
Ichthyococcus poweriæ, *Bonap. Faun. Ital. Pesc.* c. fig.
Scopelus poweriæ, *Cuv. & Val.* xxii. p. 441.

D. 11. A. 13? V. 3.

The height of the body is two-ninths of the total length (without caudal), the length of the head rather less than one-third. The origin of the dorsal fin is considerably nearer to the root of the tail than to the extremity of the snout, behind the base of the ventral; its last ray is in the vertical from the origin of the anal. The luminous spots appear as convex pearls, each sitting on a black globular body; there are twenty-five pairs between the throat and the ventral fins, those of the isthmus included.

Mediterranean.

a–b. One inch and one-third long. Sicily.

4. Maurolicus attenuatus.

Maurolicus attenuatus, *Cocco, Lett. s. Salmon.* p. 33. tab. 4. fig. 13; *Bonap. Faun. Ital. Pesc.* c. fig.
Scopelus tenorei, *Cuv. & Val.* xxii. p. 440.

D. 12. A. 15. V. 6.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head thrice and two-thirds. The origin of the dorsal is considerably nearer to the root of the tail than to the extremity of the snout, behind the base of the ventral; its last ray is above the fourth or fifth of the anal. The luminous spots appear as convex pearls, each sitting on a black globular body; there are twenty-three pairs between the throat and the ventral fins, those of the isthmus included.

Mediterranean.

a–b. One inch and a half long.

c–d. One inch and a half long. From the Haslar Hospital.

Third Group. CHAULIODONTINA.

Sternoptychoids with thin, deciduous scales, and without pseudobranchiæ.

5. GONOSTOMA.

Gonostoma (*Rafin.*), *Bonap. Faun. Ital. Pesc.*

Body oblong, compressed, covered with large scales, subequal in size. Series of luminous (phosphorescent) spots run along the branchiostegous membrane and along the lower side of the body and tail. Head much compressed, with the bones thin, but ossified. Cleft of the mouth very wide; intermaxillary short, not extending far below the level of the eye; maxillary much longer, forming nearly the entire margin of the jaw: both jaws armed with a single series of teeth unequal in size, minute ones alternating with long pointed teeth. A band of minute teeth on the palatine and pterygoid bones; palatine with a few conical teeth in front. Eye of moderate size. Pectoral and ventral fins well developed. Dorsal fin on the hinder half of the body, opposite the anal; adipose fin small, sometimes fimbriated. Anal long. Caudal forked. Gill-opening very wide, the outer branchial arch extending forward to behind the symphysis of the lower jaw, and beset with very long gill-rakers. Branchiostegals thirteen or fourteen. Pseudobranchiæ none. Air-bladder none.

Pelagic fishes, inhabiting the Mediterranean and the neighbouring parts of the Atlantic.

1. Gonostoma denudatum.

Gonostoma denudata (*Rafin.*), *Bonap. Faun. Ital. Pesc.* c. fig.; *Cuv. & Val.* xxii. p. 376; *Johnson, Ann. & Mag. Nat. Hist.* 1862, x. p. 279.
Gasteropelecus acanthurus, *Cocco, Giorn. Sc. Sic.* 1829, fasc. 77. p. 145.
Gonostomus acanthurus, *Cocco, Lett. s. Salmon. in N. Ann. Sc. Nat. Bol.* fasc. 9. p. 3. tab. 1. fig. 1.

D. 14–15. A. 30–31. V. 8. L. lat. ca 32.

The cheek is entirely covered by the exceedingly broad infraorbital bone. Each intermaxillary with two, each maxillary with twelve or thirteen long pointed teeth.

Mediterranean. Sea of Madeira.

a. Five inches and two-thirds long. Madeira. Presented by J. Y. Johnson, Esq.

b–c. Five inches long. Sicily.

d–e. From three to four inches long. Messina. Presented by Dr. Rüppell.

6. CHAULIODUS.

Chauliodus, *Bl. Schn.* p. 430.

Body elongate, compressed, covered with exceedingly thin and deciduous scales; series of luminous (phosphorescent) spots run along the lower side of the head, body, and tail. Head much compressed and elevated, with the bones thin, but ossified, and with the opercular portion very narrow, the interoperculum being rudimentary. Cleft of the mouth exceedingly wide, the intermaxillary forming one-half of the margin of the upper jaw. Each intermaxillary with four long canine teeth; edge of the maxillary finely denticulated; mandible with pointed, widely set teeth, the anterior of which are exceedingly long; none of the large teeth are received within the mouth. Palatine with a single series of small pointed teeth; no teeth on the tongue. Eye of moderate size. Pectoral and ventral fins well developed. Dorsal fin anteriorly on the trunk, before the ventrals; adipose fin small, sometimes fimbriated; anal short, rather close to the caudal, which is forked. Gill-opening very wide, the outer branchial arch extending forward to behind the symphysis of the lower jaw; it has no gill-rakers. Branchiostegals numerous; pseudobranchiæ none.

Mediterranean.

1. Chauliodus sloanii.

Catesby, Carol., Suppl. p. 9. pl. 9.
Chauliodus sloani, *Bl. Schn.* p. 430; *Cuv. & Val.* xxii. p. 383.
Choliodus setinotus, *Bl. Schn.* tab. 85.
Esox stomias, *Shaw, Zool.* v. p. 120. tab. 3.
Chauliodes schneideri, *Risso, Eur. Mérid.* iii. p. 442. fig. 37.
Chauliodus setinotus, *Bonap. Faun. Ital. Pesc.* c. fig.
Stomias schneideri (Stomias boa), *Cuv. Règne Anim. Ill. Poiss.* pl. 97. fig. 3 (incorrect).

B. 16–18. D. 6. A. 12. V. 7. L. lat. 55–57.

Head not much longer than high, its length being one-seventh of the total (with the caudal), and equal to the distance between the vent and the root of the caudal. The distance of the dorsal from the occiput is less than the length of the head, and its first ray is produced into a long filament. Ventral fins prolonged, much longer than the pectorals. There are thirty phosphorescent dots in a series running from the chin to the root of the ventral fin. The scales along the belly are of a subhexagonal shape.

Mediterranean.

a. Type of the species: 10 inches long. Straits of Gibraltar.
b–e. Half-grown and young. Messina.

Fam. 5. SCOPELIDÆ.

Scopelini, part., *Müll. Berl. Abhandl.* 1844, p. 184.

Body naked or scaly. Margin of the upper jaw formed by the intermaxillary only; opercular apparatus sometimes incompletely developed. Barbels none. Gill-opening very wide; pseudobranchiæ well developed. Air-bladder none. Adipose fin present. The eggs are enclosed in the sacs of the ovarium, and excluded by oviducts. Pyloric appendages few in number or absent. Intestinal tract very short.

Pelagic or deep-sea fishes.

These fishes show a great resemblance in their family characters to the Siluroids; they might be called the marine Siluroids, as I have formerly shown in a paper on *Alepidosaurus*. Further researches in this and other families have convinced me that I have laid too much value on the character of the absence of scales in that genus, and that it is hardly entitled to form a family by itself.

I divide the fishes of this family into the following groups and genera:—

A *Dorsal fin in, or nearly in the middle of the length of the body, short or of moderate length*: Saurina.

a. Body scaly, without phosphorescent spots.

Maxillary narrow behind; none of the teeth are barbed; teeth on the palate in a single band on each side .... 1. Saurus, p. 394.

Maxillary narrow behind; none of the teeth are barbed; teeth on the palate in a double band on each side .... 2. Saurida, p. 399.

Canine teeth of the lower jaw barbed at the point. 3. Harpodon, p. 401.

Maxillary dilated behind; dorsal fin with fifteen or more rays. 4. Aulopus, p. 402.

Maxillary dilated behind; dorsal fin with less than fifteen rays. 5. Chlorophthalmus, p. 403.

β. Body scaly, with phosphorescent spots.

Body rather compressed, covered with large scales: l. lat. 30–40. 6. Scopelus, p. 404.

Body elongate, cylindrical, covered with scales of moderate size: l. lat. ca. 60 7. Scopelosaurus, p. 417.

γ. Body naked.

Teeth unequal in size, some being long, lance-shaped. 8. Odontostomus, p. 417.

B. *Dorsal fin on the hind part of the body*: PARALEPIDINA.

None of the mandibulary teeth are very large . 9. PARALEPIS, p. 418.
Mandible with four or five very long fangs ... 10. SUDIS, p. 419.

C. *Dorsal fin occupying nearly the entire length of the back*: ALEPIDOSAURINA.

Teeth of the palatines and mandible very long and strong.
11. ALEPIDOSAURUS, p. 420.

First Group. SAURINA.

Scopeloids with the dorsal fin short or of moderate size, situated in, or nearly in the middle of the length of the body.

1. SAURUS*.

Saurus, sp., *Cuv. Règne Anim.*
Saurus, *Cuv. & Val.* xxii. p. 457.

Body subcylindrical, rather elongate, covered with scales of moderate size; head oblong; cleft of the mouth very wide; intermaxillary very long, styliform, tapering; maxillary thin, long, closely adherent to the intermaxillary. Teeth cardiform, some being elongate, slender; all can be laid downwards and inwards; teeth in the jaws, on the tongue, and on the palatine bones; those on the palate form a single band on each side. Eye of moderate size. Pectoral short. Ventral eight-rayed, the inner rays being much longer than the outer ones; this fin is inserted before the dorsal, not far behind the pectorals. Dorsal fin nearly in the middle of the length of the body, with thirteen or less rays; adipose fin small; anal short or of moderate length; caudal forked. Gill-opening very wide, the gill-membranes not attached to the isthmus; branchiostegals numerous. Pyloric appendages few in number.

Mediterranean; tropical parts of the Atlantic and Pacific.

1. Saurus griseus.

Saurus, *Salviani, De Aquat.* p. 242. pl. 99; *Jonston*, i. tit. 3. art. 1. tab. 21, fig. infima.
Tarantola Romæ, *Willughby, App.* p. 29.
Osmerus no. 2, *Artedi, Synon.* p. 22; *Genera*, p. 10.
Salmo saurus, *L. Syst. Nat.* i. p. 511; *Bloch*, xi. p. 115 (descript. part.; not fig.).

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* 1. Synodus, *Gronov. Mus. Ichth.* ii. no. 151. tab. 7. fig. 1; Esox synodus, *L. Syst. Nat.* i. p. 516; Synodus fasciatus, *Lacép.* v. p. 321; Synodus synodus, *Bl. Schn.* p. 396.—*Hab.* ——?

2. Saurus meleagrides, *Valenc. in D'Orb. Voy. Amér. Sud, Poiss.* pl. 11. fig. 3; Saurus meleagris, *Cuv. & Val.* xxii. p. 484.—Buenos Ayres.

3. Lagarto, *Parra*, p. 36. lam. 18. fig. 2; *Poey, Proc. Acad. Nat. Sc. Philad.* 1863, p. 178.—Cuba.

4. Saurus à galon rouge, *Liénard, Dix. Rapp. Soc. Hist. Nat. Maurit.* 1839, p. 41.—Mauritius. D. 14. A. 9.—This species may belong to the genus *Saurida*.

?Osmerus fasciatus, *Risso, Ichth. Nice*, p. 326.
?Saurus fasciatus, *Risso, Eur. Mérid.* iii. p. 464.
Saurus lacerta, *Cuv. & Val.* xxii. p. 463 (not *Risso*).
—— griseus, *Lowe, Trans. Zool. Soc.* ii. p. 188.
—— trivirgatus, *Valenc. in Webb & Berthel. Iles Canar. Poiss.* p. 72. pl. 15. fig. 1.

B. 15–16. D. 11–12. A. 11–12. L. lat. 58–62. L. transv. $\frac{3\frac{1}{2}}{6}$.

The length of the head is one-fourth or a little more than one-fourth of the total (without caudal). The entire upper surface of the head from the supraorbital is corrugated. Snout broader than long, pointed, with the jaws equal anteriorly, or with the upper jaw a little longer than the lower. Dorsal fin scarcely higher than long; the pectoral extends to the ninth or tenth scale of the lateral line, the ventral to the fifteenth of the median series commencing behind its base. The series of scales on the tail with a scarcely perceptible obtuse longitudinal keel

Mediterranean and the neighbouring parts of the Atlantic.

a. Fine specimen. Madeira. Presented by J. Y. Johnson, Esq.
b. Half-grown. St. Vincent. Presented by the Lords of the Admiralty.
c. Adult. Naples. Presented by S. P. Pratt, Esq.
d. Adult. Mediterranean.
e. Half-grown. From the Haslar Collection.

2. Saurus atlanticus.

Johnson, Proc. Zool. Soc. 1863, p. 41.

B. 15–16. D. 13. A. 9. V. 8. P. 12. L. lat. 59. L. transv. 4/7.

Body cylindrical, tapering in front and behind; its greatest depth equals its width, and is one-half of the length of the head, which is one-fourth of the total (without caudal). The hinder half of the frontal bones and the occipitals corrugated, with smooth interspaces between the groups of radiating striæ. Interorbital space concave. Snout a little broader than long, pointed, with the jaws equal anteriorly. There are sixteen or seventeen scales between the occiput and the origin of the dorsal fin. Dorsal fin longer than high; the pectoral extends to the eleventh scale of the lateral line, the ventral to the seventeenth of the median series commencing behind its base. The series of scales on the tail not keeled. Vertical fins without brown dots.

Madeira.

a. Adult: type of the species: not good state. Madeira. Presented by J. Y. Johnson, Esq.
b. Half-grown. Madeira. Presented by the Rev. R. T. Lowe.

3. Saurus varius.

? Salmo saurus, *Bloch*, xi. p. 115 (descript. part.), tab. 334. fig. 1.
Salmo varius, *Lacép.* v. p. 224. pl. 3. fig. 3.
Saurus variegatus, *Quoy & Gaim. Voy. Uran. Poiss.* p. 223. pl. 48. fig.

Saurus minutus, *Lesueur, Journ. Acad. Sc. Philad.* 1825, v. p. 118. pl. 5.
—— synodus, *Cuv. & Val.* xxii. p. 477 (not synon.); *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 257.
—— lucius, *Schleg. Faun. Japon. Poiss.* p. 232. pl. 106. fig. 1.

B. 15–16. D. 12–13. A. 8–9. L. lat. 60–64. L. transv. $\frac{5-6}{10}$.

The length of the head is one-fourth or rather more than one-fourth of the total (without caudal). The hinder half of the frontal bones and the occipitals with numerous fine, smooth striæ; interorbital space slightly concave. Snout rather broader than long, pointed, with the jaws equal anteriorly. There are twenty-one scales between the occiput and the dorsal fin. Dorsal fin longer than high; the pectoral extends to the tenth scale of the lateral line, the ventral to the fifteenth or seventeenth of the median series commencing behind its base. The series of scales on the tail not keeled. Vertical fins with brown dots, forming transverse streaks.

Atlantic coasts of tropical America? Indian and Pacific Oceans.

a, *b–c*. Adult and half-grown. Amboyna. Purchased of Mr. Frank.
d, *e*. Adult and half-grown. China.
f. Adult. From the Collection of the Zoological Society.
g. Half-grown: stuffed.

4. Saurus intermedius.

Saurus intermedius, *Spix, Pisc. Bras.* p. 81. tab. 44.
—— anolis, *Cuv. & Val.* xxii. p. 483.

D. 11–12. A. 11–12. L. lat. 50–52. L. transv. $\frac{3\frac{1}{2}-4}{7}$.

The length of the head is a little more than one-fourth of the total (without caudal). The hinder half of the frontal bones with a few inconspicuous striæ; interorbital space concave. Snout broader than long, pointed, with the upper jaw scarcely longer than the lower. Dorsal fin somewhat longer than high; the pectoral extends to the ninth or tenth scale of the lateral line, the ventral to the eleventh of the median series commencing behind its base. An obtuse keel along the caudal portion of the lateral line. A black blotch on the scapulary part of the gill-opening. Dorsal and caudal fins with brownish transverse bands.

Atlantic coasts of tropical America.

a–d. Adult and half-grown: skins. Jamaica. From Dr. Parnell's Collection.
e. Adult. Demerara. Purchased of Mr. Scrivener.
f. Fine specimen. Bahia From Dr. Wucherer's Collection.
g. Fine specimen. S. America. Presented by Sir R. Schomburgk.
h. Adult. Old Collection.

5. Saurus fœtens.

Saurus, sp., *Catesby, South Carolina*, ii. p. 2. tab. 2. fig. 2; *Sloane, Jamaica*, tab. 251. fig. 1.
Salmo fœtens, *L. Syst. Nat.* i. p. 513.
Coregonus ruber, *Lacép.* v. pp. 244, 263.

Saurus longirostris, *Spix, Pisc. Bras.* p. 80. tab. 43.
—— fœtens, *Cuv. & Val.* xxii. p. 471.

B. 16. D. 11–12. A. 13–14. L. lat. 65. L. transv. $\frac{4\frac{1}{2}-5}{8}$.

The length of the head is one-fourth of the total (without caudal); crown of the head with a few smooth striæ, radiating from the hind part of the orbit. Interorbital space slightly concave. Snout as long as broad, or a little longer, pointed, the upper jaw being somewhat the longer. Dorsal fin higher than long. The pectoral extends to the twelfth scale of the lateral line, the ventral to the twelfth or fourteenth of the median series commencing behind its base. The series of scales on the tail with a scarcely perceptible obtuse longitudinal keel.

Atlantic and Pacific coasts of tropical America.

a. Fine specimen. Pacific coast of Panama. From the Collection of Messrs. Dow and Salvin.
b. Adult. New Orleans. Purchased of Mr. Cuming.

Saurus spixianus, Poey, Mem. Hist. Nat. Cuba, ii. p. 304, appears to be allied to the above species; but it is said to have twelve anal rays only.

6. Saurus lucioceps.

Ayres, Proc. Calif. Acad. Nat. Sc. 1855, p. 66.

D. 11. A. 15. L. lat. 75. L. transv. 11/?.

The height of the body is about one-ninth of the total length (with the caudal); head pointed in front, its length equal to twice the height of the body. Lower jaw the longer. Eyes large, their longitudinal diameter one-fourth of the length of the head, and equal to the width of the interorbital space. Dorsal fin half as long as the head, highest anteriorly, the length of the third ray being a little more than one-eighth of the total. Ventrals extending nearly to the termination of the dorsal fin. (*Ayres.*)

San Francisco.

7. Saurus brevirostris.

Poey, Mem. Hist. Nat. Cuba, ii. p. 305.

D. 11. A. 10. Vert. 58. Cæc. pyl. 25.

The length of the head is rather more than one-fifth of the total (with the caudal); upper surface of the head rugose. The point of the dorsal fin corresponds to the vent, if laid backwards. Snout short, black at its extremity; scapula with a blackish spot. (*Poey.*)

Cuba.

8. Saurus altipinnis.

B. 16–17. D. 11. A. 12. V. 8. P 13. L. lat. 59.
L. transv. $\frac{4\frac{1}{2}}{7}$.

Body rather depressed, its greatest depth being equal to its width, which is one-seventh of the total length (without caudal); the length of the head is contained four times and one-third in the total (without caudal). Snout depressed, pointed, rather broader than long, with the upper jaw a little longer than the lower. Interorbital space slightly concave, equal in width to the horizontal diameter of the eye. Each frontal bone with fine, inconspicuous, radiating striæ. There are twenty-one scales between the occiput and the dorsal fin. Dorsal fin considerably higher than long; anterior anal rays somewhat longer than posterior. The pectoral fin extends to the eleventh scale of the lateral line, the ventral to the thirteenth or fourteenth of the median series commencing behind its base. The series of scales on the tail without keel. A silvery band runs along the side of the body and tail, below the lateral line; it is as broad as a scale.

China.

a. Ten inches long: bleached. China. Presented by Sir J. Richardson.
b. Young. China.

9. **Saurus myops.**

Salmo fœtens, *Bl.* taf. 384. fig. 2; *Bl. Schn.* p. 404 (not *L.*).
—— myops (*Forster*), *Bl. Schn.* p. 421; *Forst. Descript. Anim. ed. Lichtenst.* p. 412.
Osmerus lemniscatus, *Lacép.* v. p. 236. pl. 6. fig. 1.
Saurus fasciolatus, *Lesueur, Journ. Acad. Nat. Sc. Philad.* (according to *Valenciennes*).
—— elegans, *Gray.*
—— truncatus, *Spix, Pisc. Bras.* p. 82. tab. 45.
—— limbatus, *Eyd. & Soul. Voy. Bonite, Poiss.* p. 199. pl. 7. fig. 3.
—— myops, *Cuv. Règne Anim.*; *Cuv. & Val.* xxii. p. 485; *Bleek. Nat. Tydschr. Nederl. Ind.* iii. p. 291.
—— trachinus, *Schleg. Faun. Japon. Poiss.* p. 231. pl. 106. fig. 2; *Cant. Mal. Fish.* p. 271.

B. 16. D. 12. A. 15–16. L. lat. 56–58. L. transv. $3\frac{1}{2}/7$.

The length of the head is two-sevenths of the total (without caudal); crown of the head and occiput finely corrugated; interorbital space deeply concave. Snout rather obtuse, short, shorter than the eye, with the lower jaw a little projecting beyond the upper. Dorsal fin as high as long; the pectoral extends to the tenth scale of the lateral line, the ventral to, or nearly to, the vent. Tail compressed. Scapula black.

Tropical parts of the Atlantic, Indian, and Pacific Oceans.

a. Adult. West Indies. From the Collection of the Zoological Society.
b. Half-grown. Cuba. From the Collection of the Zoological Society.
c. Half-grown: skin. Jamaica. From Dr. Parnell's Collection.
d. Adult. Japan. Purchased of Mr. Jamrach.
e, f. Adult and half-grown. Amboyna. Purchased of Mr. Frank.
g–h. Half-grown: skins. Pinang. From Dr. Cantor's Collection.
i. Adult: stuffed. Mauritius.
k, l. Fine specimens. Port Jackson. From Mr. Krefft's Collection.

2. SAURIDA*.

Saurida, *Cuv. & Val.* xxii. p. 499.

Body subcylindrical, rather elongate, covered with scales of moderate size; head oblong, cleft of the mouth very wide; intermaxillary very long, styliform, tapering; maxillary thin, long, closely adherent to the intermaxillary. Teeth cardiform, those in the inner series being longest, slender; all can be laid downwards and inwards; teeth in the jaws, on the tongue, and on the palatine bones; those on the palate form a double band on each side, the inner band being much shorter than the outer. Eye of moderate size. Pectoral short or of moderate length. Ventral nine-rayed, the inner rays not much longer than the outer ones; this fin is inserted before the dorsal, not far behind the pectorals. Dorsal fin nearly in the middle of the length of the body, with thirteen or less rays; adipose fin small; anal short; caudal forked. Gill-opening very wide, the gill membranes not attached to the isthmus; branchiostegals numerous.

Indian Ocean; Western Pacific.

1. Saurida tumbil.

Roover, *Valent.* fig. 131; *Renard*, i. fig. 149.
Lacertus peregrinus, *Rondel. De Pisc.* xv. cap. 9. p. 428.
Badi mottah, *Russell*, tab. 172.
Salmo tumbil, *Bloch*, ix. p. 112. taf. 430; *Bl. Schn.* p. 405.
Saurus badimottah, *Cuv. Règne Anim.*; *Rüppell, Neue Wirbelth. Fische*, p. 77; *Cant. Mal. Fish.* p. 270.
Saurida tombil, *Cuv. & Val.* xxii. p. 500; *Bleek. Verh. Batav. Genootsch.* xxiv. *Chir.* p. 20.

B. 16. D. 11. A. 10. V. 9. L. lat. 60–62. L. transv. $4\frac{1}{2}/7$. Vert. 53.

Snout rather obtuse; orbit with broad adipose eyelids. The pectoral fin extends to the tenth scale of the lateral line, but not to the vertical from the origin of the dorsal fin. A conspicuous ridge along the caudal portion of the lateral line.

Red Sea, Indian Ocean, Western Pacific.

a–b. Adult: skins. Pinang. From Dr. Cantor's Collection.

2. Saurida nebulosa.

? Saurus gracilis, *Quoy & Gaim. Voy. Uran. Zool.* p. 224.
Saurus à bandes et taches, *Liénard, Dix. Rapp. Soc. Hist. Nat. Maurit.* 1839, p. 41.
Saurida nebulosa, *Cuv. & Val.* xxii. p. 504. pl. 649; *Bleek. Nat. Tydschr. Nederl. Ind.* 1852, iii. p. 292.

B. 13. D. 11. A. 9. V. 9. L. lat. 52. L. transv. $\frac{3\frac{1}{2}}{6}$.

Snout somewhat pointed; orbit with the adipose eyelids moderately developed. The pectoral fin extends to the ninth scale of the lateral line. A rather inconspicuous ridge along the caudal portion of the lateral line. Dorsal and caudal fins with brownish-black dots; the brown spots on the side of the body extend to below the lateral line.

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* 1. Saurus ferox, *Eydoux & Souleyet, Voy. Bonite, Poiss.* p. 197. pl. 7. fig. 2.—*Hab.* ——?

2. Saurus à galon rouge, *Liénard*: see p. 394, *note*.

Indian Ocean; Western Pacific.

a. Adult. Madagascar. Presented by Dr. J. E. Gray.
b. Half-grown. Amboyna. Purchased of Mr. Frank.
c. ? Adult: not good state. Sandwich Islands. Presented by Lieut. Strickland.

3. Saurida argyrophanes.

Saurus argyrophanes, *Richards. Ichth. Chin.* p. 302.
Aulopus elongatus, *Schleg. Faun. Japon. Pisc.* p. 233. pl. 105. fig. 2.

D. 11. A. 10. V. 9. L. lat. 54. L. transv. $\frac{4\frac{1}{2}}{7}$.

Snout somewhat pointed; orbit with broad adipose eyelids. The pectoral fin extends to the eleventh scale of the lateral line, but not to the vertical from the origin of the dorsal fin. A conspicuous ridge along the caudal portion of the lateral line. Body and tail below the lateral line silvery.

Chinese and Japanese Seas.

a–b. Adult: not good state. North China. Purchased of Mr. Jamrach.
c, d. Half-grown and young. China.
e. Adult. Presented by J. B. Jukes, Esq.
f. Adult.
g. Adult: stuffed. China. Presented by J. R. Reeves, Esq.

4. Saurida undosquamis.

Saurus undosquamis, *Richards. Voy. Ereb. & Terr. Ichthyol.* p. 138. pl. 51. figs. 1–6.

B. 15. D. 11. A. 11. V. 9. L. lat. 57–58. L. transv. $\frac{4\frac{1}{2}}{7}$.

Snout broad and obtuse; orbit with the adipose eyelids moderately developed. The pectoral fin extends to the eleventh scale of the lateral line, and nearly to the vertical from the origin of the dorsal fin. A conspicuous ridge along the caudal portion of the lateral line.

North-west coast of Australia.

a. Type of the species. N.W. Australia.
b–c. Adult and half-grown. Old Collection.

5. Saurida grandisquamis.

B. 15. D. 12–13. A. 11. V. 9. L. lat. 49. L. transv. 4/6–7.

The length of the head is contained four times and one-third in the total (without caudal); snout broad, obtuse, a little longer than the diameter of the eye, which is contained five times and a half in the length of the head; orbit with the adipose eyelids moderately developed. Dorsal fin much higher than long, the third (longest) ray being not much shorter than the head. The pectoral fin extends to the twelfth scale of the lateral line, and nearly to the vertical from the origin of the dorsal. A conspicuous ridge runs along the caudal portion of the lateral line. Blackish olive above, silvery beneath; the anterior rays of the dorsal and the upper ones of the caudal with brown dots.

Louisiade Archipelago.

a. Seven and a half inches long. Australia? From Mr. Macgillivray's Collection.

b–c. Ten and a half inches long: stuffed. Louisiade Archipelago. From Mr. Macgillivray's Collection.

3. HARPODON.

Harpodon, *Lesueur, Journ. Acad. Nat. Sc. Philad.* v. p. 50.

Body elongate, rather compressed, with diaphanous, very thin and deciduous scales; only those on the hind part of the body and of the lateral line are adherent to the skin. Head thick, with very short snout; its bones are very soft, and partly modified into wide muciferous channels; the lateral canal of the body is very wide also, and a pair of pores corresponds to each scale of the lateral line, one being above, the other below the scale. Cleft of the mouth very wide; intermaxillary very long, styliform, tapering; maxillary absent *. Teeth cardiform, recurved, in bands, unequal in size, some being enlarged; the largest are in the lower jaw, and provided with a single barb at the posterior margin of the point. There are teeth in the jaws, on the palatine bones, on the small tongue, and on the hyoid; the anterior teeth of the palatine band are large, and can be laid downwards; there are two or three small teeth separate from, and within, each band of palatine teeth. Eye small. Pectoral and ventral fins long; the latter are nine-rayed, inserted below the anterior dorsal rays, at some distance behind the base of the pectoral. Dorsal fin in the middle of the length of the body; adipose fin small; anal of moderate length; caudal three-lobed, the lateral line being continued along the central lobe. Gill-opening very wide, covered by the membranaceous confluent opercles; branchiostegals very numerous; pseudobranchiæ small; air-bladder none. Pyloric appendages numerous. Vertebræ soft, slightly contracted in the middle, perforated by an uninterrupted channel.

Indian and Chinese Seas.

1. Harpodon nehereus.

Bummaloh or Bombay Duck.
Russell, ii. p. 55. tab. 171.
Osmerus nehereus, *Ham. Buch. Fish. Gang.* p. 209.

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* Valenciennes mentions a rudimentary maxillary, but I am unable to find it.

Salmo (Harpadon) microps, *Lesueur, Journ. Acad. Nat. Sc. Philad.* 1825, v. p. 48. pl. 3.
Saurus ophiodon, *Cuv. Règne Anim.*; *Cuv. & Val.* xxii. p. 490.
—— nehareus, *Richards. Ichth. Chin.* p. 301; *Cant. Mal. Rept.* p. 273.

B. 23–25. D. 12–13. A. 15. V. 9. Vert. 38. Cæc. pyl. 22.

The scales commence between dorsal and ventral fins. The pectoral extends to, or somewhat beyond, the base of the ventrals.

Indian and Chinese Seas.

a, b, c. Adult. China.
d. Head of an adult. China.
e. Young. Chusan. From Dr. Cantor's Collection.
f. Half-grown. Malayan Peninsula. From Dr. Cantor's Collection.
g–h. Fine specimens. Ganges. Presented by G. R. Waterhouse, Esq.
i. Adult: skeleton (in spirits). Ganges. Presented by G. R. Waterhouse, Esq.
k. Dried specimen, prepared for eating. Presented by G. R. Gray, Esq.

4. AULOPUS.

Aulopus, *Cuv. Règne Anim.*

Head and body rather elongate, slightly compressed, covered with scales of moderate size. Cleft of the mouth very wide; maxillary well developed, dilated behind. Teeth small, cardiform, in bands, in the jaws, on the vomer, palatine and pterygoid bones, and on the tongue. Eye of moderate size. Pectoral and ventral fins well developed; the latter nine-rayed, inserted close behind the pectorals, below the anterior dorsal rays. Dorsal fin in the middle of the length of the body, rather elongate, with fifteen or more rays; adipose fin small; anal of moderate length; caudal forked. Gill-opening very wide; branchiostegals numerous; pseudobranchiæ well developed. Pyloric appendages few in number. Air-bladder none.

Mediterranean and the neighbouring parts of the Atlantic; Australian Seas.

1. Aulopus filamentosus.

Salmo filamentosus, *Bloch, Schrift. Naturforsch. Freund. Berl.* x. taf. 9. fig. 2.
—— tirus, *Rafinesque.*
Osmerus saurus, *Risso, Ichth. Nice,* p. 325.
Aulopus filamentosus, *Cuv. Règne Anim.*; *Bonap. Faun. Ital. Pesc.* c. fig.; *Cuv. & Val.* xxii. p. 513.
Saurus lacerta, *Risso, Eur. Mérid.* iii. p. 463; *Lowe, Trans. Zool. Soc.* ii. p. 188, and *Proc. Zool. Soc.* 1843, p. 88.
Aulopus filifer, *Valenc. in Webb & Berthel. Iles Canar. Poiss.* p. 73. pl. 15. fig. 2.
—— maculatus, *Valenc. l. c.* p. 74. pl. 15. fig. 3.

B. 16. D. 15. A. 11–12. V. 9. L. lat. 54. L. transv. 5/6. Vert. 30/21. Cæc. pyl. 5–6.

The length of the head is contained thrice and one-third in the total (without caudal); the second and third dorsal rays produced into a long filament in the male. Female with a black blotch at the top of the dorsal fin.

Mediterranean and the neighbouring parts of the Atlantic.

a. Adult: female: stuffed. Mediterranean. From Dr. Rüppell's Collection.
b, c–d. Fine specimens. Madeira. Presented by J. Y. Johnson, Esq.
e. Adult: female: skeleton. Madeira. Presented by J. Y. Johnson, Esq.

The entire *skeleton* is perfectly ossified, and especially the opercular apparatus is completely developed, the suboperculum being very large, rather larger than the operculum, and forming the entire posterior margin of the gill-opening. Interoperculum as wide and as long as the lower limb of the præoperculum. The cubital bone is long and styliform, leaving a very wide free space between it and the humerus. The length of the abdominal portion of the vertebral column is to that of the caudal as 1·6 : 1. The vertebræ are as wide as long, contracted in the middle; each abdominal vertebra is provided with a pair of slender ribs on each side of its ventral surface, and with another single one at the base of each neural spine. The pubic bones are very broad, confluent, so as to leave scarcely any free space between them; they form a rather convex triangular lamella in front, and are produced into a long styliform process behind.

2. **Aulopus purpurissatus.**

Aulopus purpurissatus, *Richards. Ic. Pisc.* p. 6. pl. 2. fig. 3 (very bad).
—— milesii, *Cuv. & Val.* xxii. p. 519. pl. 650.

D. 19–22. A. 13–14. V. 9. L. lat. 51. L. transv. 6/9.

The length of the head is contained thrice and one-fourth in the total (without caudal); the second and third dorsal rays produced into a long filament in the male. Dorsal and anal fins with several series of round purple spots.

Australia.

a. Adult: stuffed. Port Jackson. Purchased of Mr. Gould.
b. Adult: stuffed. Hobson Bay. Presented by the Earl of Derby.
c. Adult: stuffed. Australia. Purchased of Mr. Warwick.
d. Adult. From the Haslar Collection.

5. CHLOROPHTHALMUS.

Chlorophthalmus, *Bonap. Faun. Ital. Pesc.*

Head and body rather elongate, rather compressed behind, covered with scales of moderate size. Cleft of the mouth wide; maxillary well developed, dilated behind. Teeth minute, in narrow bands, in the jaws, on the vomer, the palatine bones, and the tongue. Eye large. Pectoral and ventral fins well developed; the latter nine-rayed, inserted at no great distance behind the pectorals, somewhat behind the origin of the dorsal fin. Dorsal fin somewhat before the middle of the length of the body, short, with eleven or twelve rays; adipose fin small; anal short; caudal forked. Gill-opening very wide; branchiostegals ten; pseudobranchiæ well developed.

Mediterranean.

1. Chlorophthalmus agassizii.

Chlorophthalmus agassizi, *Bonap. Faun. Ital. Pesc.* c. fig.
Aulopus agassizi, *Cuv. & Val.* xxii. p. 521.

B. 10. D. 11–12. A. 9. P. 16. V. 9. L. lat. 53. L. transv. 4/6.

The lower jaw projects beyond the upper. The length of the head is rather less than one-third of the total (without caudal). Pectoral fin long, extending beyond the root of the ventral. Scales with the margin denticulated.

Mediterranean.

a–b. From 2 to $2\frac{1}{2}$ inches long. Messina.

6. SCOPELUS [*].

Scopelus, sp., *Cuv. Règne Anim.*
Scopelus, Myctophum (Nyctophus), Lampanyctus, *Cocco.*
Alysia, *Lowe, Trans. Zool. Soc.* iii. p. 14.
Neoscopelus, *Johnson, Proc. Zool. Soc.* 1863, p. 44.

Body oblong, more or less compressed, covered with large scales, those of the lateral line being generally the largest. Series of luminous (phosphorescent) spots run along the lower side of the head, body, and tail, and a similar substance sometimes occupies the front of the snout and the back of the tail. Head generally compressed, with the bones thin, but ossified. Cleft of the mouth very wide. Intermaxillary very long, styliform, tapering; maxillary well developed. Teeth villiform, in bands, in both jaws, on the palatine and pterygoid bones, and on the tongue. The vomer bears small teeth in the larger species, but none are visible in the small species or in young specimens. Eye large. Pectoral and ventral fins well developed; the latter are eight-rayed, inserted immediately in front of the dorsal or below its anterior portion, at some distance behind the base of the pectoral. Dorsal fin in, or nearly in, the middle of the length of the body; adipose fin small, sometimes fimbriated. Anal generally long. Caudal forked. Gill-opening very wide, the outer branchial arch extending forward to behind the symphysis of the lower jaw, and beset with very long gill-rakers. Branchiostegals from eight to ten. Pseudobranchiæ well developed. Air-bladder small. Pyloric appendages in small number.

Pelagic fishes, inhabiting the temperate and tropical seas.

[*] 1. Scopelus coruscans, *C. & V.* xxii. p. 454 (not *Richards.*).—Seychelles.
2. —— brachygnathos, *Bleek. Act. Soc. Sc. Indo-Neerl.* i. *Manado & Makassar*, p. 65.—Manado.
3. Gasteropelecus crocodilus, *Risso, Ichth. Nice*, p. 357; Scopelus crocodilus, *Risso, in Memor. Accad. Sc. Torino*, 1820, xxv. p. 265. pl. 10. fig. 1 (bad), and *Eur. Mérid.* iii. p. 466.—Nice.
4. Scopelus angustidens, *Risso, in Memor. Accad. Sc. Torino*, 1820, xxv. p. 267.—Nice.

The species may be referred to the following subgenera:—

A. The anal fin has more rays than, or as many as, the dorsal.
  a. Eye large, one-third or more than one-third of the length of the head; no spine above the orbit.
    α. Scales smooth: *Myctophum*, m., p. 405.
    β. Scales denticulated: *Dasyscopelus*, m., p. 411.
  b. Eye large; a horizontal spine above the orbit: *Ceratoscopelus*, m., p. 412.
  c. Eye of moderate size, less than one-third of the length of the head.
    α. Scales smooth, those of the lateral line much larger than the others: *Alysia*, Lowe, p. 413.
    β. Scales smooth, subequal in size: *Lampanyctus*, Cocco, p. 414.
    γ. Scales covered with minute spines: *Neoscopelus*, Johnson, p. 414.
B. The dorsal fin has more rays than the anal.
  a. Scales of the lateral line considerably larger than the others, p. 415.
  b. Scales of the lateral line not much larger than the others: *Notoscopelus*, m., p. 415.

A. The anal fin has more rays than, or as many as, the dorsal.

a. Eye large, one-third or more than one-third of the length of the head; no spine above the orbit.

α. Scales smooth.

1. Scopelus rissoi.

Scopelus rissoi, *Cocco, in Giorn. Sicil.* fasc. 77. p. 144, and *Lett. s. Salmon.* p. 15. tab. 2. fig. 5; *Bonap. Faun. Ital. Pesc.* c. fig.; *Cuv. & Val.* xxii. p. 446.

D. 13–14. A. 17–18. V. 8. L. lat. 32. L. transv. 2/4.

The height of the body is contained thrice in the total length (without caudal), the length of the head twice and two-thirds; the least depth of the tail is one-third of the height of the body; the depth of the head equals the distance between the anterior margin of the orbit and the end of the gill-opening. Eye very large, its diameter being contained twice and two-thirds in the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is one-fourth of the diameter of the eye. Snout very short and obtuse, its upper and lower profiles being nearly equally curved. Cleft of the mouth oblique, with the lower jaw scarcely prominent beyond the upper; the maxillary reaches to the angle of the præoperculum and terminates in a triangular dilatation. The origin of the dorsal fin is a little nearer to the root of the caudal than to the extremity of the snout, and behind the base of the ventral; its last ray is in the vertical from the fourth or fifth anal ray. The pectoral fin extends to the anal. Scales smooth, those of the lateral line being much elevated, but short: there are six scales between the adipose and caudal fins. No pearl-coloured spot on the back of the tail.

Mediterranean; Madeira.

a–b. From one to two inches long. Mediterranean.

c. One inch long. Messina.
d. Three inches long. Madeira. From the Collection of the Rev. R. T. Lowe.

2. Scopelus benoiti.

Scopelus benoiti, *Cocco, Lett. s. Salmon.* p. 12. tab. 2. fig. 4; *Bonap. Faun. Ital. Pesc.* c. fig.

D. 12–13. A. 17. V. 7. L. lat. 39. L. transv. 3/4.

The height of the body is contained four times in the total length (without caudal the length of the head thrice and one-fourth; the least depth of the tail is two-fifths of the height of the body; the depth of the head is contained once and two-fifths in its length. Eye very large, its diameter being two-fifths of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is one-fourth of the diameter of the eye. Snout short, obtusely conical, its upper and lower profiles being nearly equally curved. Cleft of the mouth oblique, with the lower jaw prominent; the maxillary reaches to the angle of the præoperculum, and terminates in a triangular dilatation. The origin of the dorsal fin is nearly midway between the extremity of the snout and the root of the caudal, immediately behind the base of the ventral; its last ray is in the vertical from the third or fourth anal ray. The pectoral fin extends nearly as far backwards as the ventral. Scales smooth, those of the lateral line not larger than the others; there are nine scales between the adipose and caudal fins. Most of the specimens have an elliptical, bright, pearl-coloured patch on the back of the tail.

Mediterranean; coasts of Norway and Greenland.

a, b–d. From two to three inches long. Mediterranean.
e–k. Messina. Presented by Dr. Rüppell.

3. Scopelus parvimanus.

D. 12. A. 19. L. lat. 34.

The height of the body is contained four times and a half in the total length (without caudal), the length of the head thrice and two-thirds; the least depth of the tail is two-fifths of the height of the body; the depth of the head is contained once and two-fifths in its length. Eye large, its diameter being contained twice and two-thirds in the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is one-third of the diameter of the eye. Snout short, obtusely conical, its upper and lower profiles being nearly equally curved. Cleft of the mouth oblique, with the lower jaw prominent; the maxillary reaches to the angle of the præoperculum, and terminates in a triangular dilatation. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal, above the middle of the distance between the bases of the ventral and anal fins; its last ray is in the vertical from the sixth of the anal fin. Pectoral fin very small, scarcely extending to the root of the ventral. Scales smooth, those of the lateral line elevated and larger than the others. There are five phosphorescent dots in a series running from the isthmus to the ventral; an elliptical pearl-coloured patch on the back of the tail.

South Pacific.

a. Three inches long. Presented by Mrs. Wormold.

4. Scopelus glacialis.

Ström, Skrivt. Naturhist. Selsk. ii. p. 15. tab. i. fig. 2.
Scopelus glacialis, *Reinh. Dansk. Vidensk. Selsk.* 1838, vii. pp. 115, 126; *Nilss. Skand. Faun. Fisk.* p. 483; *Kröyer, Naturhist. Tidssk.* 1847, ii. p. 230, and *in Gaim. Voy. Scand. Poiss. Atl.* pl. 16. fig. 2.

D. 12–14. A. 16–18. V. 8. L. lat. 36.

The height of the body is nearly equal to the length of the head, and one-fourth of the total (without caudal); the least depth of the tail is two-fifths of the height of the body; head nearly as high as long; eye very large, its diameter being more than one-third of the length of the head. Snout very short and obtuse, with the upper profile descending in a very strong curve. Cleft of the mouth oblique; maxillary reaching to the angle of the præoperculum and terminating in a triangular dilatation. Scales smooth, those of the lateral line enlarged.

Coasts of Greenland and Scandinavia.

Nilsson compares this species with *Scopelus rissoi*, but this has the body much more elevated.

5. Scopelus humboldti.

Gasteropelecus humbolti, *Risso, Ichth. Nice*, p. 358. pl. 10. fig. 38 (very bad).
Scopelus humboldti, *Risso, in Memor. Accad. Sc. Torino*, 1820, xxv. p. 266. pl. 10. fig. 2 (very bad), and *Eur. Mérid.* iii. p. 467; *Cuv. & Val.* xxii. p. 431; *Cuv. Règne Anim. Ill. Poiss.* pl. 103. fig. 2 (not good).
? Myctophum punctatum, *Rafinesque.*

B. 10. D. 13. A. 22. V. 8. L. lat. 41. L. transv. 2/4.

The height of the body is one-fifth of the total length (without caudal), the length of the head two-sevenths; the least depth of the tail is two-fifths of the height of the body; the depth of the head contained once and three-fifths in its length; diameter of the eye a little less than one-third of the length of the head; distance between the posterior margin of the orbit and the præopercular edge one-half of the diameter of the eye. Snout short, obtuse, with its upper profile descending in a strong curve, and with the jaws equal anteriorly. The maxillary reaches nearly to the angle of the præoperculum, and is slightly and gradually dilated behind. The origin of the dorsal fin is somewhat nearer to the end of the snout than to the root of the caudal, above the root of the inner ventral rays; its last ray is before the vertical from the origin of the anal. The pectoral extends to the posterior third of the ventral. Scales smooth, stiff.

Mediterranean and the neighbouring parts of the Atlantic.

a, b–d. Adult ($4\frac{1}{3}$ inches long) and half-grown. Atlantic. Presented by J. B. Godfrey, Esq.

6. Scopelus boops.

Myctophum boops, *Richards. Zool. Ereb. & Terr. Fish.* p. 39. pl. 27. figs. 6–12.
Scopelus boops, *Cuv. & Val.* xxii. p. 451.

Very similar to *S. humboldti*, but with fewer scales in the lateral line.

D. 14. A. 20–22. V. 8. L. lat. 37–39. L. transv. 3/5.

The height of the body is one-fifth or a little more than one-fifth of the total length (without caudal), the length of the head two-sevenths; the least depth of the tail is two-fifths of the height of the body; the depth of the head is contained once and three-fifths in its length; the diameter of the eye is a little less than one-third of the length of the head; distance between the posterior margin of the orbit and the præopercular edge one-half of the diameter of the eye. Snout short, obtuse, with its upper profile descending in a strong curve, and with the jaws equal anteriorly. The maxillary reaches nearly to the angle of the præoperculum, and is slightly and gradually dilated behind. Cleft of the mouth very slightly oblique. The origin of the dorsal fin is considerably nearer to the end of the snout than to the root of the caudal, above the root of the inner ventral rays: its last ray is before the vertical from the origin of the anal fin. The pectoral extends to the vent. Scales smooth, thin, and deciduous.

Pacific.

a. Four and a half inches long. Type of the species. Presented by Sir J. Richardson.
b. Four inches long. Vancouver Islands.

7. Scopelus macrochir.

D. 13. A. 21. V. 8. L. lat. 31.

The height of the body is contained four times in the total length (without caudal), the length of the head thrice and one-third; the least depth of the tail is two-fifths of the height of the body; the depth of the head is two-thirds of its length. Eye very large, its diameter being nearly twice the width of the interorbital space, and rather more than one-third of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is one-third of the diameter of the eye. Posterior margin of the præoperculum subvertical. Snout short, obtusely conical, its upper and lower profiles being nearly equally curved. Cleft of the mouth oblique, with the lower jaw somewhat projecting beyond the upper. The maxillary reaches to below the posterior margin of the orbit, and terminates in a triangular dilatation, resting upon the angle of the præoperculum. The origin of the dorsal fin is somewhat nearer to the extremity of the snout than to the root of the caudal, immediately behind the base of the ventral; its last ray is just before the vertical from the origin of the anal fin. Pectoral very long, extending to the anal. Scales smooth, those of the lateral line somewhat larger than the others. Lower parts with the pearl-coloured dots usually found in this genus; an elliptical pearl-coloured patch sometimes on the back of the tail, and sometimes at its lower side.

Hab. —— ?

a–b. Two and a half inches long. Old Collection.
c. Two inches long. From the Haslar Collection.

8. **Scopelus caninianus.**

? Myctophum punctatum, *Bonap. Faun. Ital. Pesc.* c. fig. (not *Rafin.*).
? Scopelus caninianus, *Cuv. & Val.* xxii. p. 445.

D. 12. A. 19. V. 8. L. lat. 40.

The height of the body is two-ninths of the total length (without caudal), the length of the head two-sevenths; the least depth of the tail is two-fifths of the height of the body; the depth of the head is contained once and one-third in its length; diameter of the eye one-third of the length of the head; distance between the posterior margin of the orbit and the præopercular edge one-half of the diameter of the eye. Snout short and obtuse, with its upper profile abruptly bent downwards. Cleft of the mouth slightly oblique, with the jaws equal in front. The maxillary reaches to the angle of the præoperculum, and is gradually and slightly dilated behind; posterior margin of the præoperculum subvertical. The origin of the dorsal fin is somewhat nearer to the extremity of the snout than to the root of the caudal, and immediately behind the base of the ventral; its last ray is immediately before the vertical from the origin of the anal. The pectoral fin extends to the middle of the ventral. Scales perfectly smooth, those of the lateral line larger than the others. No luminous substance below the eye.

Mediterranean and neighbouring parts of the Atlantic.

a–b. Three inches long. Presented by R. P. Webb, Esq.

9. **Scopelus metopoclampus.**

Myctophum metopoclampum, *Cocco, in Giorn. Lett. Sc. Sic.* fasc. 77. p. 144; *Bonap. Faun. Ital. Pesc.* c. fig.
Nyctophus metopoclampus, *Cocco, Lett. s. Salmon.* p. 24. tab. 3. fig. 8.
Scopelus metopoclampum, *Cuv. & Val.* xxii. p. 442.

D. 15. A. 15.

The height of the body is contained thrice and one-third in the total length (without caudal), the length of the head thrice and two-thirds; the least depth of the tail is two-fifths of the height of the body; head rather higher than long; eye large, one-third of the length of the head. Snout extremely short and obtuse, with its upper profile abruptly bent downwards, and with the pearl-coloured luminous apparatus occupying nearly its whole front and extending backwards over the infraorbital bone. Cleft of the mouth slightly oblique. The maxillary reaches nearly to the angle of the præoperculum, and is not dilated behind. The origins of the dorsal and ventral fins are midway between the extremity of the snout and the adipose fin; the last dorsal ray immediately in front of the origin of the anal. Pectoral shorter than ventral. Scales smooth, those of the lateral line the largest. (*Bonap.*)

Coasts of Sicily.

10. Scopelus rafinesquii.

Myctophus rafinesquii, *Cocco, Lett. s. Salmon.* p. 20. tab. 3. fig. 7; *Bonap. Faun. Ital. Pesc.* c. fig.*

D. 12. A. 11–12. V. 8. L. lat. 32. L. transv. 2/4.

The height of the body is contained nearly four times in the total length (without caudal), the length of the head twice and three-fourths; the least depth of the tail is one-half of the height of the body; the depth of the head is contained once and two-fifths in its length. Eye very large, its diameter being contained twice and one-third in the length of the head; distance between the posterior margin of the orbit and the præopercular edge three-fifths of the diameter of the eye. Snout extremely short and obtuse, with its upper profile abruptly bent downwards in front. Cleft of the mouth slightly oblique, with the lower jaw received within the upper. The maxillary reaches to the angle of the præoperculum, and is not dilated behind. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal, and above the base of the ventral; its last ray is a little before the vertical from the origin of the anal. Pectoral fin short, extending to the ventral, which is much the longer. Scales perfectly smooth, those of the lateral line being elevated. There are six scales between the adipose and caudal fins. No pearl-coloured spot on the back of the tail, but a similar luminous substance in the hollow of the first infraorbital bone.

Mediterranean.

a–c. Two inches long. Mediterranean.
d–g. One inch and a half long. Messina. Presented by Dr. Rüppell.

11. Scopelus dumerilii.

Scopelus dumerilii, *Bleek. Act. Soc. Sc. Indo-Neerl.* i. *Manado & Makassar*, p. 66.

D. 14–15. A. 14–15. V. 9.

The height of the body is contained five times and one-third in the total length (with the caudal), the length of the head four times and three-fourths; head longer than high; the diameter of the eye is contained thrice or thrice and one-third in the length of the head; præoperculum with the posterior margin oblique. The origin of the dorsal fin is above the root of the ventrals, and its end before the vertical from the first anal ray; pectoral somewhat shorter than ventral. (*Bleek.*)

Manado.

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* It must be remarked that two of the figures on this plate are erroneously numbered; *M. rafinesquii* ought to bear no. 2, and not no. 4.

β. Scales denticulated.

12. Scopelus asper.

Myctophum asperum, *Richards. Voy. Ereb. & Terr. Ichth.* p. 41. pl. 27. figs. 13–15.
Scopelus asper, *Cuv. & Val.* xxii. p. 454.

D. 13. A. 20. V. 8. L. lat. 37. L. transv. 2/3.

The height of the body is one-fourth of the total length (without caudal), the length of the head two-sevenths; the least depth of the tail is one-third of the height of the body; the depth of the head contained once and one-third in its length. Eye very large, two-fifths of the length of the head; distance between the posterior margin of the orbit and the præopercular edge one-third of the diameter of the eye; posterior margin of the præoperculum vertical. Snout extremely short and obtuse, with its upper profile abruptly bent downwards. Cleft of the mouth nearly horizontal, with the lower jaw received within the upper. The maxillary reaches nearly to the angle of the præoperculum, and is gradually and slightly dilated behind. The origin of the dorsal fin is considerably nearer to the extremity of the snout than to the root of the caudal, and immediately behind the base of the ventral; its last ray is a little before the origin of the anal. The pectoral extends to the middle of the ventral, which is the shorter. Scales with the margins strongly serrated; those of the lateral line are much larger than the others. Some of the adult specimens have a pearl-coloured matter imbedded in the substance of the scales on the back of the tail.

Gulf of Guinea; New Ireland.

a–b. From one to two inches long. Types of the species. From the Haslar Collection.
c–e. Three inches long. Gulf of Guinea.

13. Scopelus subasper.

D. 14. A. 21. V. 8. L. lat. 39. L. transv. 2/4.

The height of the body is contained four times in the total length (without caudal), the length of the head thrice and two-thirds; the least depth of the tail is one-third of the height of the body; head but little longer than high. Eye very large, its diameter being more than the width of the interorbital space, and contained twice and one-third in the length of the head. The posterior margin of the orbit and the præopercular edge are separated by a groove only; posterior margin of the præoperculum subvertical. Snout extremely short and obtuse, with the upper profile abruptly bent downwards. The maxillary is comparatively short, three-fifths of the length of the head; it terminates in a triangular dilatation behind, and reaches to the angle of the præoperculum. The origin of the dorsal fin is nearer to the extremity of the snout than to the root of the caudal, and behind the base of the ventrals; its last ray is vertically above the fourth or fifth of the anal. The pectoral does not extend quite as far backwards as the ventral, which is considerably the shorter. Scales coarsely denticulated, each having only from two to four spines; those of the lateral line are much elevated, twice or thrice the size of the others. A short, elliptical, pearl-coloured patch on the back of the tail, close to the root of the caudal fin; lower parts with the pearl-coloured dots usually found in this genus.

Pacific Ocean.

a. Four and a half inches long. Collected by Dr. Robertson in lat. 43° 30′ S. and long. 123° E.

This is perhaps the same species as that found by Bennett, and described as *Scopelus stellatus* (Whaling Voy. ii. p. 288). However, I infer this more from the identity of the locality where these fishes have been found, than from the very defective description and rude figure.

b. Eye large; a horizontal spine above the orbit.

14. Scopelus maderensis.

Scopelus maderensis, *Lowe, Proc. Zool. Soc.* 1839, p. 87, and 1850, p. 250; *Trans. Zool. Soc.* iii. p. 14.

—— bonapartii, *Cuv. & Val.* xxii. p. 449 (not synon.); *Johnson, Ann. & Mag. Nat. Hist.* 1862, x. p. 281.

D. 13–14. A. 13. V. 8. L. lat. 34.

The height of the body is nearly one-fifth of the total length (without caudal), the length of the head nearly one-third; the least depth of the tail is one-half of the height of the body; the depth of the head contained once and two-thirds in its length; eye large, but a little less than one-third of the length of the head, and more than the width of the interorbital space. A horizontal spine projects forward from each superciliary edge. The distance between the posterior margin of the orbit and the præopercular edge is one-half of the diameter of the eye, the posterior margin of the præoperculum being oblique. Snout obtusely conical, not very short, more than half as long as the orbit. Cleft of the mouth oblique, with the lower jaw received within the upper. The maxillary reaches to the angle of the præoperculum, and is gradually and slightly dilated behind. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal fin, above the base of the inner ventral rays; its last ray is in the vertical from the origin of the anal fin. A series of three or four small spines bent backwards, above and below, before the root of the caudal. Pectoral fin very long, extending to, or nearly to, the vent. Scales smooth, very thin, deciduous, those of the lateral line being the largest.

This species has the pearl-coloured dots on the lower parts as usual in this genus, but there is no glandular apparatus on the back of the tail, and only a very small round patch near the nostril.

Mediterranean and the neighbouring parts of the Atlantic.

a–c. From 3 to 3½ inches long. Mediterranean.

d–e. Three inches long. Madeira. Presented by J. Y. Johnson, Esq.

f. Type of the species. Madeira. From the Collection of the Rev. R. T. Lowe.

g. Three inches long; bad state. Presented by R. P. Webb, Esq.

c. Eye of moderate size, less than one-third of the length of the head.

a. Scales smooth, those of the lateral line much larger than the others.

15. Scopelus coccoi.

Scopelus coccoi, *Cocco, in Giorn. Sicil.* fasc. 77. p. 143, and *Lett. s. Salmon.* p. 18. tab. 2. fig. 6; *Bonap. Faun. Ital. Pesc.* c. fig.

Alysia loricata, *Lowe, Proc. Zool. Soc.* 1839, p. 87, and *Trans. Zool. Soc.* iii. p. 14.

Myctophum hians, *Richards. Voy. Ereb. & Terr. Ichth.* p. 41. pl. 27. figs. 19–21 (eye too large).

? Scopelus jagorii, *Peters, Monatsber. Berl. Acad.* 1859, p. 411.

D. 10–12. A. 20–21. V. 8. L. lat. 41. L. transv. 1/3.

The height of the body is nearly equal to the length of the head, and rather more than one-fifth of the total (without caudal); tail slender and elongate, its least depth being one-fourth of the height of the body; the depth of the head is contained once and three-fifths in its length; the diameter of the eye is one-fourth or somewhat less than one-fourth of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is two-thirds of the diameter of the eye. Præopercular edge obliquely descending backwards. Snout conical, with the upper part projecting beyond the lower, and with the upper and lower profiles nearly equally curved. The maxillary reaches to the angle of the præoperculum, and is scarcely dilated. The origin of the dorsal fin is much nearer to the end of the snout than to the root of the caudal, behind the base of the ventral; its last ray is in the vertical from the second or third anal ray. The pectoral extends to the middle of the ventral. Scales smooth, stiff; there are nine or ten scales between the adipose and caudal fins; and in some specimens each of the scales on the back of the tail has a pearl-coloured dot.

Mediterranean and Atlantic.

The largest of our specimens are 2 inches long.

a. Gulf of Guinea.
b–c. Congo Expedition.
d–e, f–g. North Atlantic. Presented by J. B. Godfrey, Esq.
h–l. Atlantic. From Mr. Rouse's Collection.—(Caught plentifully at night throughout the Tropic of Cancer.)
m–n, o–s. Within the tropics. Presented by Lieutenant A. Smith.
t–u. Types of *Myctophum hians.* Presented by Sir J. Richardson.
v, w, x–z. Adult and half-grown.

Having seen the typical example of *Alysia loricata*, Lowe, in the Museum of the Philosophical Society of the University of Cambridge, I cannot doubt its specific identity with *Sc. coccoi.* As regards the serrature of the ventral and dorsal lines, Mr. Lowe justly remarks, in a letter to me, that this character is due merely to the accidental protrusion of the tips of the bones through the flesh, as frequently observed in subdecomposed examples of *Scopelus.* The scales also of *Alysia* appeared to me to be as smooth as in *Sc. coccoi.*

Myctophum coruscans (Richards. Voy. Ereb. & Terr. Fish. p. 40, pl. 27. figs. 1–5) is extremely similar to this species, but it is described as having the scales very irregularly and sparingly toothed on the free edge, and the back of the tail, behind the adipose fin, covered by *six* convex scales. From the Southern Atlantic and the Australian Oceans. The typical specimens appear to be lost.

Valenciennes (p. 456) identifies the *Myctophum hians*, Richards., with *Scopelus notatus*, Lesueur. I do not know whether this is correct, as I am unable to find the original description of the latter in the journal quoted by Valenciennes, viz. Journ. Acad. Nat. Sci. Philad. tom. i.

β. Scales smooth, subequal in size.

16. Scopelus bonapartii.

Nyctophus bonapartii, *Cocco, Lett. s. Salmon.* p. 29. tab. 3. fig. 10.
Lampanyctus bonapartii, *Bonap. Faun. Ital. Pesc.* c. fig.
Scopelus rafinesquii, *Cuv. & Val.* xxii. p. 444.

D. 13. A. 15. V. 8. L. lat. 32. L. transv. 3/4.

The height of the body is one-fifth of the total length (without caudal), the length of the head two-sevenths; the least depth of the tail is more than one-half of the height of the body; the depth of the head is three-fifths of its length; eye of moderate size, one-fifth of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is more than the diameter of the eye. Posterior margin of the præoperculum obliquely descending backwards. Snout obtusely conical, with the lower jaw rather the longer. Cleft of the mouth slightly oblique. The maxillary reaches to the angle of the præoperculum, and is scarcely dilated behind. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal, and above the base of the inner ventral rays; its last ray is above the fourth or fifth of the anal fin. Pectoral fin very long, extending nearly to the middle of the anal. Scales perfectly smooth, those of the lateral line scarcely larger than the others.

Mediterranean.

a. One inch and three-quarters long. Mediterranean.

It appears that Valenciennes has described this species under the name of *Scopelus rafinesquii*; and this supposition becomes almost a certainty when we find that the description given by him for *Scopelus bonapartii* does not agree in the least with the species so called by Cocco.

γ. Scales covered with minute spines.

17. Scopelus macrolepidotus.

Neoscopelus macrolepidotus, *Johnson, Proc. Zool. Soc.* 1863, p. 44. pl. 7.

B. 9. D. 13. A. 13. V. 8. L. lat. 30. L. transv. 3/5.

The height of the body is a little more than one-fourth of the total length (without caudal), the length of the head one-third; eye of moderate size, one-fifth of the length of the head, and equal to the width of the interorbital space, and to the distance between its posterior margin and the præopercular edge. Snout conical, longer than the eye, with the lower jaw rather prominent. The maxillary reaches only to the vertical from the posterior margin of the eye, and is much dilated behind. The origin of the dorsal fin is before the root of the ventral, nearer to the extremity of the snout than to the root of the caudal. Pectoral fin long, extending nearly to the vent. The posterior margin of each scale is covered with minute spines, but the margin itself is not serrated.

Madeira.

a. Nine and a half inches long. Type of the species. Presented by J. Y. Johnson, Esq.

B. The dorsal fin has more rays than the anal.

a. Scales of the lateral line considerably larger than the others.

18. Scopelus gemellarii.

Nyctophus gemellarii, *Cocco, Lett. s. Salmon.* p. 26. tab. 3. fig. 9.
Myctophum gemellarii, *Bonap. Faun. Ital. Pesc.* c. fig.*
Scopelus gemellari, *Cuv. & Val.* xxii. p. 445.

D. 17. A. 15.

The height of the body is one-fourth of the total length (without caudal), the length of the head two-sevenths; the least depth of the tail is two-fifths of the height of the body; depth of the head contained once and two-fifths in its length; eye of moderate size, one-fourth of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge equals the diameter of the eye. Snout short, obtuse, with its upper profile descending in a strong curve. Cleft of the mouth slightly oblique. Maxillary reaching to the angle of the præoperculum, and not dilated behind. The origin of the dorsal fin is nearer to the extremity of the snout than to the adipose fin, and vertically before the root of the ventral; its last ray is in the vertical from the origin of the anal. Pectoral and ventral fins equal in length. Scales smooth, those of the lateral line being the largest. (*Bonap.*)

Mediterranean.

b. Scales of the lateral line not much larger than the others.

19. Scopelus resplendens.

Lampanyctus resplendens, *Richards. Voy. Ereb. & Terr. Ichth.* p. 42. pl. 27. figs. 16–18.
Scopelus crocodilus, *Cuv. & Val.* xxii. p. 447 (not *Risso*).
—— resplendens, *Cuv. & Val.* xxii. p. 452.

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* The figure of this fish is marked with the no. 2; it ought to be no. 4.

? Scopelus Kroyeri, *Malm, Forhandl. Skand. Naturf. Ott. Möd. Kjöbenh.* 1861, p. 617.

B. 8. D. 21–24. A. 18. V. 8. L. lat. 38. L. transv. 3/5.

The height of the body is contained five times in the total length (without caudal), the length of the head thrice and a half or thrice and three-fifths; the least depth of the tail is more than one-half of the height of the body; depth of the head three-fifths of its length; eye of moderate size, two-ninths of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is less than the diameter of the eye; posterior margin of the præoperculum descending obliquely backwards. Snout obtusely conical, with the jaws equal in front. Cleft of the mouth nearly horizontal. The maxillary reaches to the angle of the præoperculum, and is scarcely dilated behind. The origin of the dorsal fin is midway between the extremity of the snout and the adipose fin, and above the root of the ventral; its last ray is above the middle of the anal. Pectoral fin shorter than the ventral, and not extending beyond its root. Scales perfectly smooth, those of the lateral line rather larger than the others.

Gulf of Guinea. Bohuslän?

a–c. Four inches long. Types of the species. Presented by Sir J. Richardson.

d–e. Four inches long. Gulf of Guinea.

f. Five inches long. Presented by the Royal College of Surgeons.

20. **Scopelus caudispinosus.**

Scopelus caudispinosus, *Johnson, Proc. Zool. Soc.* 1863, p. 42.

D. 26. A. 18. V. 8. L. lat. 36.

The height of the body is contained five times and a half in the total length (without caudal), the length of the head thrice and two-thirds; the least depth of the tail is one-half of the height of the body; depth of the head three-fifths of its length; eye of moderate size, two-ninths of the length of the head; the distance between the posterior margin of the orbit and the præopercular edge is less than the diameter of the eye; posterior margin of the præoperculum descending obliquely backwards. Snout obtusely conical, with the jaws equal in front. Cleft of the mouth rather oblique. The maxillary reaches to the præoperculum, and is not dilated behind. The origin of the dorsal fin is midway between the extremity of the snout and the adipose fin, and above the base of the outer ventral rays; its last ray is behind the vertical from the middle of the anal. A series of from six to nine small spines bent backwards, above and below, before the root of the caudal. Pectoral fins shorter than the ventral, and not extending beyond its root.

Madeira.

a. Type of the species: not good state: $6\frac{1}{3}$ inches long. Presented by J. Y. Johnson, Esq.

7. SCOPELOSAURUS.

Scopelosaurus, *Bleek. Amboina*, xi. p. 12.

Body elongate, cylindrical, covered with cycloid scales of moderate size, there being about sixty in the lateral line; series of luminous (phosphorescent) spots run along the lower side of the body. Cleft of the mouth wide; intermaxillary tapering; maxillary well developed. Teeth small, in a single series in the intermaxillary, on the vomer and the palatines, and in several series in the lower jaw; tongue without teeth. Eye large. Dorsal fin nearly in the middle of the length of the body, behind the ventrals, which are ten-rayed. Branchiostegals nine; pseudobranchiæ well developed.

Amboyna.

1. Scopelosaurus hoedti.

Bleeker, *l. c.* p. 13.

D. 10. A. 17. P. 13. V. 10. L. lat. 61.

The height of the body is contained eleven times and three-quarters in the total length (with the caudal), the length of the head four times and three-fifths; the depth of the head is two-fifths of its length; the diameter of the eye is contained thrice and one-third in the length of the head, and rather less than the extent of the snout. Upper jaw shorter than the lower, and extending to below the hind part of the orbit. (*Blkr.*)

Amboyna.

8. ODONTOSTOMUS.

Odontostomus, *Cocco.*

Body oblong, compressed, naked; head large and thick; snout short; cleft of the mouth very wide; intermaxillary and maxillary bones very slender, the former with small curved teeth of equal size; the lower jaw, the vomer, and the palatine bones armed with long moveable teeth, the points of which are lance-shaped. Eye large. Pectoral and ventral fins well developed; the latter are inserted below the dorsal, at some distance behind the base of the pectoral. Dorsal fin in the middle of the length of the body; adipose fin small; anal long; caudal forked. Branchiostegals eight; pseudobranchiæ small.

Mediterranean.

1. Odontostomus hyalinus.

Odontostomus hyalinus, *Cocco, Lett. s. Salmon.* p. 32. tab. 4. fig. 2; *Bonap. Faun. Ital. Pesc.* c. fig. minus bona; *Cuv. & Val.* xxii. p. 424.
Scopelus balbo, *Risso, Hist. Nat. Eur. Mérid.* iii. p. 466, and *Mem. Accad. Sc. Torino*, xxv. p. 268. pl. 10. fig. 3.

D. 14. A. 28. P. 9. V. 8. (*Bonap.*)
B. 8. D. 12. A. 34. P. 10. V. 8. (*Risso.*)
B. 8. D. 12. A. 35. P. 12. V. 9. (*Valenc.*)

The length of the head is a little more than one-fifth of the total (with the caudal), the height of the body one-sixth. The eyes, although lateral, are directed upwards and close together, the interorbital space being very narrow; their vertical diameter is longer than the horizontal one, and they rest upon an adipose eyelid.

Mediterranean.

Second Group. PARALEPIDINA.

Scopeloids with the dorsal fin on the hind part of the body.

9. PARALEPIS.

Paralepis, *Risso, Eur. Mérid.* iii. p. 472.

Head and body elongate, compressed, covered with deciduous scales, those of the lateral line being the largest. Cleft of the mouth very wide; maxillary developed, closely adherent to the intermaxillary. Teeth unequal in size, some in the mandible and on the palatine bones being rather larger than the others; they are arranged in single series, in the intermaxillary, mandible, on the palatine and pterygoid bones. Eye large. Pectoral fins well developed; ventrals small, inserted at a great distance from the pectorals, below or immediately behind or in front of the dorsal fin. Dorsal fin short, on the hind part of the body; adipose fin small; anal elongate, occupying the end of the tail; caudal emarginate. Gill-opening very wide, the outer branchial arch beset with short spine-like gill-rakers; pseudobranchiæ well developed; branchiostegals seven. Air-bladder none. Pyloric appendages none.

Mediterranean and the neighbouring parts of the Atlantic.

This genus is evidently closely allied to *Alepidosaurus*.

1. Paralepis coregonoides.

Coregonus marænula (!), *Risso, Ichth. Nice,* p. 328.
Paralepis coregonoides, *Risso, Eur. Mérid.* iii. p. 472. pl. 7. fig. 15; *Cuv. & Val.* vii. p. 510; *Bonap. Faun. Ital. Pesc.* c. fig.

D. 10. A. 23. P. 13. V. 9.

The length of the head is nearly one-fourth of the total (without caudal). Ventral fins very short, inserted below the anterior part of the dorsal.

Mediterranean.

2. Paralepis sphyrænoides.

Paralepis sphyrænoides, *Risso, Eur. Mérid.* iii. p. 473. pl. 7. fig. 16; *Cuv. & Val.* vii. p. 510.
—— coregonoides, *Cuv. & Val.* iii. p. 357. pl. 66 (not *Risso*); *Johnson, Ann. & Mag. Nat. Hist.* 1862, x. p. 283.

B. 7. D. 11*. A. 30. P. 13. V. 9. L. lat. 60.

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* Mr. Johnson has counted 14 dorsal rays, but several rays being split to the base into their lateral halves, he appears to have counted them twice; the anal

The length of the head is two-sevenths or one-fourth of the total (without caudal). Pectoral and ventral fins very short.

Mediterranean; Madeira.

a. Seven and a half inches long: not good state. Madeira. Presented by J. Y. Johnson, Esq.

It is possible that two or three species have been confounded in the synonymy given above, for whilst Risso figures his specimen with the ventral fins attached in front of the dorsal, Cuvier and Johnson represent them as situated below the dorsal fin. Furthermore, the question arises whether the figure given by Risso is not intended for *Sudis hyalina*. It also appears as if the species from Madeira had the head comparatively longer than the species from the Mediterranean. Doubtful points like these are not solved by the practice of giving a distinct specific name to the types described by the several authors, but can only be settled by those who have complete material.

3. **Paralepis borealis.**

? Clupea encrasicholus, *Fabr. Faun. Grönl.* no. 130. p. 183.

Paralepis borealis, *Reinhardt, Naturv. og Mathem. Afhandl.* vii. pp. 115 & 125; *Kröyer, Naturh. Tidssk.* 1846, ii. p. 241, and in *Gaim. Voy. Scand. Atl. Poiss.* pl. 16 B. fig. 1.

Ḃ. 7. D. 8. A. 32. P. 11. V. 9.

The length of the head is two-ninths of the total (without caudal). Pectoral and ventral fins small, the latter inserted behind the dorsal.

Greenland.

10. **SUDIS.**

Sudis, *Rafinesque.*

Head and body elongate, compressed, covered with very thin and deciduous scales, only those of the lateral line being adherent. Snout long, compressed, elevated; cleft of the mouth very wide; maxillary closely adherent to the intermaxillary. Teeth very unequal in size, arranged in single series: those of the intermaxillary are equally minute, whilst the mandible is armed with four or five very long, pointed, widely set canines; palatine bones with a few pointed teeth of moderate size anteriorly. Eye of moderate size. Pectoral fins well developed; ventrals inserted at a considerable distance from the root of the pectorals, in front of the dorsal fin. Dorsal fin short, behind the middle of the length of the body; adipose fin small; anal elongate; caudal emarginate. Gill-opening very wide; pseudobranchiæ well developed.

Mediterranean.

This genus is closely allied to *Paralepis*.

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rays are sufficiently preserved to ascertain their number; whilst the ventrals are so much destroyed, that even their position, whether below or in front of the dorsal fin, remains doubtful.

1. Sudis hyalina.

Sudis hyalina (*Rafin.*), *Bonap. Faun. Ital. Pesc.* c. fig.
Paralepis hyalinus, *Cuv. & Val.* iii. p. 361.

D. 10. A. 24. P. 12. V. 9.

The length of the head is two-sevenths of the total (without caudal). Eye situated in the hinder part of the head, the cleft of the mouth not extending to its anterior margin.

Mediterranean.

a–b. From 2½ to 3½ inches long. Messina.

I am not quite certain whether these specimens belong to the species mentioned, as they have the pectoral fins much more elongate than is represented in the figure given by Bonaparte. These fins in our specimens extend to the origin of the dorsal fin; however, this may be peculiar to youth.

Third Group. ALEPIDOSAURINA.

Scopeloids with the dorsal fin much elongate, occupying nearly the entire length of the back.

11. ALEPIDOSAURUS.

Alepisaurus, *Lowe, Proc. Zool. Soc.* 1833, p. 104, and *Trans. Zool. Soc.* i. p. 124.

Body elongate, rather compressed, scaleless; head compressed, with the snout much produced, and with the cleft of the mouth very wide; intermaxillary very long and very slender; maxillary thin, needle-like, as long as the intermaxillary, immoveable. Teeth very unequal in size, immoveable. A series of very small teeth runs along the entire length of the intermaxillary. Teeth of the palatine bone compressed, triangular, pointed, the two or three anterior ones being exceedingly long and strong, and the posterior ones of moderate size. Teeth of the lower jaw similar to those of the palatine bones, one pair in front and two or three pairs in the middle being much enlarged. No teeth on the tongue. Eye large. Pectoral and ventral fins well developed. The rayed dorsal fin occupies the whole length of the back from the occiput to the anal fin. Adipose and anal fins of moderate size. Caudal forked. Gill-opening very wide. Branchiostegals six or seven. The outer branchial arch with stiff, shortish, spine-like gill-rakers. Pseudobranchiæ well developed. Air-bladder none.

Deep-sea fishes from the temperate and tropical parts of the Atlantic and Pacific.

Like most other deep-sea fishes, *Alepidosaurus* has been found at widely distant localities, and it is probable that in time it will be obtained in the intermediate parts of the ocean. Deep-sea fishes are much less subject to differences of climate than those inhabiting the coasts or the surface, and therefore we should not be surprised to find the representatives of one and the same genus, and frequently even the same species, in high latitudes of the northern and southern hemispheres.

Every part of the *Alepidosauri* is so fragile, that it is extremely difficult to obtain perfect specimens. It is almost impossible to preserve them in spirits without some portion of the dorsal and of the other fins being broken. The entire structure of the dorsal fin is so delicate, that it must even be liable to injury and alteration of outline while the fish is in its native element. The fibrous ligaments connecting the vertebræ are very loose and extensible, so that the form of the fish is easily lengthened when its body is slightly stretched. Therefore no reliance whatever is to be placed on trivial specific distinctions founded on the form of the dorsal fin and on the relative proportions of the head and body. A comparison of the two figures of *A. ferox* given by Lowe will show the truth of this observation.

The loose connexion of the single parts of the body is found in numerous deep-sea fishes, and is merely the consequence of their withdrawal from the pressure of the water to which they are exposed in the depths inhabited by them. When within the limits of their natural haunts, the osseous, muscular, and fibrous parts of the body will have that solidity which is required for the rapid and powerful movements of a predatory fish. That the fishes of this genus belong to the most ferocious of the class is proved by their dentition and the contents of their stomach; but it is worthy of notice that although the mouth is so deeply cleft, the lower jaw cannot be moved from the upper at a greater angle than about 40°. The teeth are constantly changing, and it is odd that an ichthyologist like Lowe should have had so much difficulty in recognizing the nature of some immature teeth lying in tho gingiva.

1. **Alepidosaurus ferox.**

Alepisaurus ferox, *Lowe, Trans. Zool. Soc.* i. pl. 19, and p. 395. pl. 59; *Cuv. & Val.* xxii. p. 529; *Günth. Wiegm. Arch.* 1860, p. 121; *Peters, Monatsber. Berl. Acad.* 1861, p. 901; *Johnson, Ann. & Mag. Nat. Hist.* 1862, x. p. 317.
? Alepisaurus, *Richards. Voy. Ereb. & Terr. Fish.* p. 34. pl. 22. figs. 1–4.
Alepisaurus azureus, *Cuv. & Val.* xxii. p. 530.

B. 6–7. D. 41–44. A. 14–17. P. 14–15. V. 9–10.

The length of the head is twice the height of the body, and rather less than one-sixth of the total (without caudal). The eye occupies the middle of the length of the head, of which it is one-sixth; its diameter equals the width of the interorbital space. Dorsal fin much elevated. Pectoral elongate, but terminating at a great distance from the ventral; the first ray of the dorsal, pectoral, and ventral fins with the edge slightly serrated. Upper caudal lobe produced into a long filament.

Atlantic. Van Diemen's Land.

a, b. Types of the species. Madeira. From the Collection of the Zoological Society.
c. Young. Taken from the stomach of specimen *b*.

d. Fine specimen. Madeira. Presented by J. Y. Johnson, Esq.
e. Contents of the stomach of specimen *f*: viz. *Alepidosaurus ferox* (young), *Trachurus trachurus*, a dozen of young *Capros aper*, one young *Brama*, and several Octopods, Crustaceans, and Ascidiæ.
f. Adult, skeleton. Madeira. Presented by the Rev. R. T. Lowe.
g. Front part of a skull. Van Diemen's Land. Presented by Sir J. Richardson*.

The structure of the intestinal tract is very similar to that of *Paralepis*, as described by Cuvier. The stomach forms a very long sac, the blind end of which extends backwards to the level of the pubic bones. The membrane between its outer coating and its inner mucous membrane is of a deep black colour; the inner surface of its upper portion is longitudinally folded, whilst a number of transverse folds cross the longitudinal ones in the posterior portion. The pyloric aperture is situated quite at its upper end, behind the humeral arch. The commencement of the intestine has extremely thick walls, with a great number of cells imbedded in it, which give a reticulated appearance to its internal surface; its appearance recalls the cellular structure of the lung of a reptile. There is no pyloric appendage. The membranes of the intestine become gradually thinner on the level of the sixth or seventh vertebra, and the remainder of its course is almost straight to its end, which is behind the ventral fins

All the bones are extremely thin, light, and flexible, containing very little earthy matter, with the exception of the palatine and dentary bones, which, being armed with strong teeth, are firmer and more solid than the others. Almost all the bones have prominent ridges radiating from the centre of ossification. The intermaxillary is very thin, styliform, being only slightly dilated at its anterior extremity. Maxillary needle-shaped, with an elliptical supplementary bone at its posterior extremity. The frontal and parietal bones do not form sutures along the lines of their junction, but are merely in juxtaposition. The suboperculum is nearly as large as the operculum, whilst the interoperculum is quite rudimentary and situated behind the angle of the mandible; the præorbital is a long, narrow, tubiform bone, open at its outer surface; the posterior part of the infraorbital ring is formed by a chain of about eight rudimentary bones. Posterior process of the humerus long, triangular, with the coracoid attached along its upper margin; the coracoid is formed of two bones. The vertebral column consists of forty-two elongate vertebræ, each being very distinctly of an hour-glass shape and provided with four ridges; the ribs, neural and hæmal spines are very rudimentary, except those of the last four vertebræ, which are dilated, and destined to support the caudal fin. *A system of abdominal ribs, symmetrically arranged on both sides, runs along the whole length of the medial line of the abdomen to the origin of the anal fin.*

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* I cannot confirm the existence of the characters which are said by Sir J. Richardson to distinguish this skull from that of a Madeiran specimen.

2. Alepidosaurus altivelis.

Alepisaurus altivelis, *Poey, Mem. Cuba*, ii. p. 302.

B. 7. D. 40. A. 17. P. 16. V. 13.

The length of the head is more than twice the height of the body, and contained six times and one-fourth in the total (with the caudal). Dorsal fin much elevated; pectoral elongate, but terminating at a great distance from the ventral; ventral about half as long as the head. (Caudal lobes equal in length?) (*Poey.*)

Cuba.

Poey had the opportunity of observing a second specimen which slightly differed from the type of *A. altivelis*, but not considering his materials to be sufficient for defining specific characters, he wisely abstained from creating a nominal species; whilst Mr. Gill would not let this opportunity pass of associating his name with a form of which he had very little knowledge. Accordingly he named it *Caulopus poeyi*, Gill, Proc. Acad. Nat. Sc. Philad. 1862, p. 131. Not satisfied with this, he forms another species, "at least very nearly related to *C. poeyi*," from the mutilated remains of a specimen discovered at Monterey; he names it *Caulopus serra*, Gill.

3. Alepidosaurus borealis.

Caulopus borealis, *Gill, Proc. Acad. Nat. Sc. Philad.* 1862, p. 128.

D. ca 34. V. 13. The ventral fins are said to be at least as long as the head.

This species is very imperfectly known, being founded on a specimen of which the head and a part of the fins only were preserved; it was obtained in Puget's Sound. Mr. Gill describes some of the teeth as "vomerine" teeth, probably taking the anterior palatine teeth as such.

Fam. 6. STOMIATIDÆ.

Skin naked or with exceedingly fine scales; a hyoid barbel. Margin of the upper jaw formed by the intermaxillary and maxillary, which are both toothed; opercular apparatus but little developed. Gill-opening very wide; pseudobranchiæ none. (Air-bladder absent?) Adipose fin absent or present. The eggs are enclosed in the sacs of the ovarium, and excluded by oviducts.

Pelagic or deep-sea fishes which hitherto have been found in the Atlantic only.

We divide them into two groups:—

A. Two dorsal fins: the anterior above the interspace between ventrals and anal; the posterior adipose: ASTRONESTHINA.

Body scaleless	1. ASTRONESTHES, p. 424.

B. One dorsal fin, opposite to the anal: STOMIATINA.

Body with exceedingly fine and deciduous scales.	2. STOMIAS, p. 426.
Body scaleless; teeth on the palate	3. ECHIOSTOMA, p. 427.
Body scaleless; no teeth on the palate	4. MALACOSTEUS, p. 427.

First Group. ASTRONESTHINA.

1. ASTRONESTHES.

Astronesthes, *Richards. Ichth. Voy. Sulph.* p. 97.
Phænodon, *Lowe, Proc. Zool. Soc.* 1850, p. 250.

Body rather elongate and compressed, scaleless, with the vent situated at no great distance from the caudal fin. Head rather compressed, with the snout short and with the cleft of the mouth wide. Teeth pointed, unequal in size, two pairs in the upper jaw and one in the lower being long, curved canine teeth; maxillary finely and subequally denticulated; vomer with a pair of small fangs; palatines with a single series of small pointed teeth, similar to those of the tongue. Eye of moderate size. A fleshy barbel is suspended from the centre of the hyoid region. Dorsal fin rather long, opposite the interspace between the ventrals and the anal; caudal forked; pectoral and ventral fins well developed. Series of luminous dots run along the lower side of the head, body, and tail. Gill-opening very wide, the outer branchial arch with minute gill-rakers; pseudobranchiæ none; air-bladder none. Stomach cæcal.

Atlantic.

1. Astronesthes niger.

Astronesthes nigra, *Richards. Ichth. Voy. Sulph.* p. 97. pl. 50. figs. 1–3.
Stomias fieldii, *Cuv. & Val.* xviii. p. 378.
Chauliodus fieldii, *Cuv. & Val.* xxii. p. 389.
Phænodon ringens, *Lowe, Proc. Zool. Soc.* 1850, p. 251.

B. 17. D. 14–16. A. 14. P. 9. V. 7. Vert. 30/15.

The length of the head is contained four times in the total length (without caudal), its depth five times and a half. Barbel shorter than the head. The origin of the dorsal fin is midway between the extremity of the snout and the root of the caudal; the pectoral extends nearly to the base of the ventral, whilst the ventral terminates at some distance from the vent. The lower parts of the body with numerous minute pearl-coloured granules; there are twenty-two luminous dots in a series running from the symphysis of the mandible to the root of the ventral. Brownish black; sometimes with an oblong bluish spot behind the shoulder.

Atlantic.

None of our specimens exceed a length of four inches.

a, b. Gulf of Guinea.
c–d. Lagos. Presented by Thomas Moore, Esq.
e–f, g–h. Atlantic.
i. 47° 55′ W. long., 22° 15′ N. lat. From Mr. Rouse's Collection.
k. Many specimens. Gulf of Mexico.
l–m. From the Haslar Collection.
n. Type of the species. Presented by Sir J. Richardson.

2. Astronesthes richardsonii.

Chauliodus richardsonii, *Poey, Mem. Cub.* i. lam. 10. fig. 2.
Astronesthes richardsonii, *Poey, l. c.* p. 176.

Very similar to *A. niger*, but with only twelve dorsal rays.

Cuba.

3. Astronesthes barbatus.

Kner, Sitzgsber. Acad. Wiss. Wien, 1860, xxxix. p. 543. fig. 5.

D. 16. A. 16. P. 7. V. 7.

Very similar to *Astronesthes niger*, but with the barbel longer, and nearly equal to one-half of the total length.

Coast of Brazil.

Kner says that this species differs from *Astronesthes niger* because the latter has no canine teeth in the lower jaw; however, these canine teeth have been described and figured by Sir J. Richardson.

Second Group. STOMIATINA.

2. STOMIAS.

Stomias, *Cuv. Règne Anim.*

Body elongate, compressed, covered with exceedingly fine and deciduous scales, which are scarcely imbricate, lying in subhexagonal impressions; vent situated at no great distance from the caudal fin. Head compressed, with the snout very short and with the cleft of the mouth very wide. Teeth pointed, unequal in size, those of the intermaxillaries and of the mandible being the longest; maxillary finely denticulated; vomer with a pair of fangs; palatine bones and tongue with smaller pointed teeth. Eye of moderate size. Opercular portion of the head narrow. A fleshy barbel in the centre of the hyoid region. Dorsal opposite the anal, close to the caudal; pectoral and ventral fins feeble, the latter inserted behind the middle of the length of the body. Series of phosphorescent dots run along the lower side of the head, body, and tail. Gill-opening very wide. (Air-bladder present?) Pyloric appendages none.

Mediterranean, Atlantic.

1. Stomias boa.

Esox boa, *Risso, Ichth. Nicc,* p. 330. pl. 10. fig. 34 (barbel omitted).
Stomias boa, *Risso, Eur. Mérid.* iii. p. 440. fig. 40 (bad); *Cuv. Règne Anim.*; *Cuv. & Val.* xviii. p. 368. fig. 545.

B. 17. D. 18. A. 19. P. 6. V. 5.

The height of the body is about one-twelfth of the total length, the length of the head one-eighth; barbel shorter than the head, and fringed at its extremity; ventrals rather long.

Mediterranean.

2. Stomias barbatus.

? Stomias barbatus, *Cuv. Règne Anim.* 2nd edit. p. 283.
Stomias barbatus, *Bonap. Faun. Ital. Pesc.* c. fig.

D. 9. A. 13. P. 6. V. 6.

The height of the body is about one-eleventh of the total length, the length of the head one-ninth; barbel twice as long as the head, and fringed at its extremity. Ventrals very small. (*Bonap.*)

Mediterranean.

3. Stomias ferox.

Reinhardt, Vidensk. Selsk. Naturv. og Math. Afhandl. x. p. lxxviii; *Kröyer, Naturh. Tidssk.* 1846, ii. p. 253, and in *Gaimard, Voy. Scand. Atl. Poiss.* pl. 16 B. fig. 1.

D. 17. A. 21. P. 6. V. 6.

The height of the body is about one-twelfth of the total length, the length of the head one-tenth. The barbel is longer than the head, tapering, and not fringed at its extremity. Neither the pectorals nor the ventrals are produced; caudal rounded. Black.

Greenland.

3. ECHIOSTOMA.

Echiostoma, *Lowe, Proc. Zool. Soc.* 1843, p. 87.

Body elongate, compressed, scaleless, with the vent situated at no great distance from the caudal fin. Head rather compressed, with the snout short and with the cleft of the mouth very wide. Teeth pointed, unequal in size, those of the intermaxillary and of the anterior part of the mandible being the longest; maxillary teeth in a single series, those of its lower two-thirds being very small; teeth of the hinder part of the mandible in a double or treble series; vomer with a pair of fangs; palatines with a single series of small pointed teeth; two groups of similar teeth on the tongue. Eye of moderate size. Opercular portion of the head very narrow and flexible. A fleshy barbel is suspended from the centre of the hyoid region. Dorsal fin opposite the anal, close to the caudal; caudal forked. Pectoral and ventral fins feeble, the latter inserted behind the middle of the length of the body. Series of phosphorescent dots run along the lower side of the head, body, and tail. Gill-openings very wide; the outer branchial arch with minute gill-rakers; pseudobranchiæ none. Air-bladder none.

Madeira.

1. Echiostoma barbatum.

Echiostoma barbatum, *Lowe, Proc. Zool. Soc.* 1843, p. 88 (not Stomias barbatus, *Risso*).

B. 12. D. 12–15. A. 16–18. P. 3–5. V. 8.

The height of the body is contained eight times in the total length (with the caudal fin), the length of the head six times and three-fourths; the barbel is much shorter than the head, and not fringed at its extremity. The upper pectoral ray is produced into a very long and fine filament which reaches nearly to the root of the ventral; ventral fin narrow, prolonged. Black, with an elongate club-shaped rose-coloured spot between the maxillary bone and the eye.

Madeira.

a. Fine specimen, 9 inches long. Madeira.

The spot below the eye is of a white colour in the preserved specimen, and is the surface of an oblong body imbedded between the muscles, which probably has phosphorescent properties in the live fish.

4. MALACOSTEUS.

Malacosteus, *Ayres, in Journ. Bost. Soc. Nat. Hist.* 1849, p. 53.

Body elongate, compressed, scaleless, with the vent situated at no great distance from the caudal fin. Head rather compressed, with the snout very short and with the cleft of the mouth exceedingly wide. Teeth pointed, unequal in size, in single series, in the intermaxillary, maxillary, mandible, and on the tongue; none on the palate. Eye of moderate size; opercular apparatus membranaceous. A fleshy barbel is suspended from the hyoid region. Dorsal fin opposite the anal, at no great distance from the caudal. Pectorals rudimentary; ventrals inserted somewhat behind the middle of the length of the body. Gill-openings very wide. Air-bladder none.

Atlantic.

1. Malacosteus niger.

Ayres, l. c. pl. 5.

D. 19. A. 20. P. 5. V. 6.

The height of the body is one-sixth of the total length, the length of the head rather more than one-fourth; snout extremely short, convex; cleft of the mouth extending to behind the root of the pectoral, the hind limb of the præoperculum being very oblique. Intermaxillary teeth small, but considerably larger than those of the maxillary; anterior half of the mandible with very long canine teeth. Barbel long, slender*. The pectoral rays are coalescent into a thin and long filament; some of the ventral rays produced into filaments. Black, with a white spot between the maxillary and the eye†. (*Ayres.*)

A single specimen, 8½ inches long, is known; it was picked up at sea, in N. lat. 42° and W. long. 50°.

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* In consequence of laceration of the lower parts of the head, Dr. Ayres did not recognize the barbel, representing it as a connecting band between tongue and symphysis of the mandible.

† This spot is identical with that of *Echiostoma*.

ADDENDA.

Page 16. **Clarias macracanthus.**

f, g–i. Adult and half-grown. Lake of Galilee. From the Collection of the Rev. H. B. Tristram.

Page 18. **Clarias fuscus.**

k. Half-grown. China. Purchased of Mr. Stevens.

Page 24. **Plotosus anguillaris.**

x. Nine inches long. Purchased.

Page 30. **Saccobranchus singio.**

m. Young. Hill-ranges of Travancore. Presented by Dr. F. Day.

Page 31. **Saccobranchus fossilis.**

Add to the synonymy :—

Silurus singio, *Wyllie, Proc. Zool. Soc.* 1840, p. 34.

Page 32. **Silurus glanis.**

f–g. Fine specimens. Lake of Derkos. Purchased of Mr. Millingen.
h. Adult: skeleton. Lake of Derkos. Purchased of Mr. Millingen.

Page 33. Add the following species :—

2 *a.* **Silurus triostegus.**

Heckel, in Russegger, Reise, i. p. 1090. pl. 13. fig. 1.

B. 14. D. 3. A. 89. P. 1/11. V. 11.

Lower jaw prominent; the length of the head is contained five times and one-fourth in the total. The maxillary barbels reach to the end, those of the mandible to the middle of the head. Pectoral spine serrated; anal and caudal confluent. (*Heckel.*)

River Tigris.

Page 35. **Silurichthys phaiosoma.**

b. Another specimen from Dr. Bleeker's Collection.

Page 37. **Wallago leerii.**

a. Type of the species. From Dr. Bleeker's Collection.

Page 40. **Cryptopterus amboinensis.**

b. We have received another specimen from Dr. Bleeker's Collection, under the name of *Cryptopterus bicirrhis.* It has 60 anal rays, and a very small slit (*porus axillaris*) in the axil of the pectoral fin; the presence of this porus has been denied by Dr. Bleeker, but he has probably overlooked it. Therefore it seems that *Cryptopterus bicirrhis* of Bleeker is identical with my *Cr. amboinensis*, but it remains doubtful whether it is also identical with the fish described by Valenciennes.

Page 41. **Cryptopterus schilbeides.**

b. Another specimen from Dr. Bleeker's Collection.

Page 42. **Cryptopterus micropus.**

k. Another specimen from Dr. Bleeker's Collection.

Page 72. Add a new species:—

3 *a.* **Chrysichthys furcatus.**

D. 1/6. A. 13. P. 1/9. V. 6.

The height of the body is one-sixth of the total length (without caudal), the length of the head rather more than one-fourth; head much broader than high, its greatest width being contained once and two-fifths in its length; its upper surface is covered with a thin skin; occipital process longer than the basal bone of the dorsal spine, both meeting behind the middle of the nape. Snout broad, but scarcely depressed, its length being more than one-third of the length of the head; upper jaw rather longer than the lower. Nasal barbels very small; the barbels of the maxillary extend to the end of the head, the outer ones of the mandible to the gill-opening. The teeth on the palate form two long and straight bands, convergent in front, narrowest in the middle and cuneiform at the extremities. The width of the bony portion of the interorbital space is rather more than the longitudinal diameter of the eye, which is one-fifth of the length of the head, and one-half of that of the snout. Dorsal fin elevated; its longest rays are one-fourth longer than the spine, which is as long as the head without snout, and finely serrated behind. Adipose fin shorter than, and very remote from, the dorsal; anal rather high, its longest ray being as long as the dorsal spine. Caudal fin large, deeply forked, the upper lobe being the longer. Pectoral spine stronger, but shorter, than that of the dorsal, with strong recurved spines along its inner margin. Ventral shorter than pectoral, not extending to the anal. Uniform brownish above, whitish below.

West Africa.

a. Fifteen inches long. Purchased of Mr. Dalton.

Page 73. **Chrysichthys nigrodigitatus.**

Add to the diagnosis:—

The diameter of the eye is contained once and three-fifths in the extent of the snout (in a specimen 16 inches long). The length of the dorsal spine is two-thirds, or rather more than two-thirds, of that of the head, and more than that of the pectoral.

Page 73. Add a new species:—

6. Chrysichthys acutirostris.

Closely allied to *Ch. nigrodigitatus*, but with a longer snout, smaller eye, and shorter dorsal spine.

D. 1/6. A. 13. P. 1/9.

The height of the body is contained five times and one-third in the total length (without caudal), the length of the head thrice and one-third. Snout long, pointed, the diameter of the eye being one-fifth of the length of the head, one-half of the extent of the snout, and rather more than the width of the bony parts between the orbits. The teeth on the palate form two small groups, separated by an interspace equal in width to that of one of the groups. Barbels and nuchal cuirass as in *Ch. nigrodigitatus*. The dorsal fin is higher than the body, but much lower than the head is long; its spine is strong, slightly serrated behind, its length being less than two-thirds of that of the head, and equal to that of the pectoral. Adipose fin shorter than dorsal; caudal deeply forked, with the upper lobe longest.

Angola.

a. 9½ inches long. Golungo Alto. Presented by Dr. Welwitsch.

Page 75. **Macrones aleppensis.**

Synon.: Bagrus halepensis, *Heckel, in Russegger, Reise*, i. p. 1091. pl. 13. fig. 2.

On referring to the second edition of Russell's Natural History of Aleppo (vol. ii. p. 210. pl. 7. fig. 1), I find that this fish had been named by Solander *Silurus pelusius*. Therefore the specific name ought to be *Macrones pelusius*.

Page 109. **Hemisorubim platyrhynchus.**

a. Fine specimen. Surinam. From the Stuttgart Museum.

Page 184. **Euglyptosternum coum.**

Synon.: Arius cous, *Heckel, in Russegger, Reise*, i. p. 1094. taf. 13. fig. 3.

Page 192. **Ageniosus brevifilis.**

Add to the diagnosis:—

The diameter of the eye is nearly one-half of the distance between orbit and posterior nostril. The porus axillaris a simple very small foramen.

Page 192. Add a new species:—

3 *a*. Ageniosus axillaris.

D. 1/6. A. 38. P. 1/15. V. 8.

This species is very similar to *A. brevifilis*, but may be readily distinguished by its larger eye and by its porus axillaris.

The length of the head is contained thrice and three-fourths in the total (without caudal); it is covered with soft skin above, and its greatest width is two-thirds of its length. Snout very obtuse, subsemicircular, with the upper jaw longer; the anterior margin of the eye is nearer to the extremity of the snout than to the end of the operculum. The styliform maxillary is prolonged into a very small barbel, not fringed, hidden in a groove, and not extending to the angle of the mouth. Each band of teeth in the upper jaw is much broader anteriorly than in the middle of its length. Eye rather large, its diameter being two-thirds of its distance from the posterior nostril. Dorsal spine slender, not quite half as long as the head, finely serrated anteriorly; pectoral spine flexible; the porus axillaris is wider than the anterior nostril, and closed by a membrane perforated by many smaller foramina. Caudal fin obliquely emarginate. The pectoral does not extend to the ventral, which reaches the anal. Upper and lateral parts brownish, with several indistinct whitish bands along the side. Dorsal fin and upper side of pectoral with irregular blackish-brown spots; basal half of the caudal black, the remainder white.

Surinam.

a. Twelve and a half inches long. From the Stuttgart Museum.

Page 192. **Ageniosus dentatus.**

Read: ? Silurus inermis, *Bloch,* t. 363, instead of t. 366.

Page 248. **Chætostomus calamita.**

b–d. Male and females. Rio Apurimac. From Mr. Pentland's Collection.

The four specimens which we possess of this species are 5 inches long, two being males and two females; *the former alone have the snout covered with tentacles,* whilst the females have no tentacles whatever on the soft margin of the snout; therefore it is evident that the tentacles are a sexual character, and that great caution is necessary in determining specimens of this genus.

Page 249. **Chætostomus erinaceus.**

Figured in *Gay, Hist. Chile, Zool.* ii. p. 308. lam. 6 bis, fig. 2.

Page 254, *note.*

Loricaria scolopacina, Filippi, is probably a species of *Acestra,* perhaps identical with *A. acus,* to the synonymy of which it has been referred at p. 261.

Page 308. **Leporinus pachyurus.**

b. Adult: stuffed. Rio Jocintins. Purchased of Mr. Gardiner.

Add to p. 19 of Volume I. :—

6*a*. MELAMPHAËS.

Metopias, *Lowe, Proc. Zool. Soc.* 1843, p. 90.

Head large and thick, with nearly all the superficial bones modified into wide muciferous channels. Cleft of the mouth of moderate width, obliquely descending backwards, with the jaws nearly equal in front. Eye small. A narrow band of villiform teeth in both the jaws; palate toothless. Eight branchiostegals, pseudobranchiæ present; no barbels; opercles not armed. Scales large, cycloid, rather irregularly arranged. One dorsal; ventrals with seven rays; caudal forked; anal spines very feeble.

Deep-sea fishes off the Island of Madeira.

The name *Metopias* is preoccupied by several genera of insects, by one of birds, and by one of reptiles.

1. **Melamphaës typhlops.**

Metopias typhlops, *Lowe, l. c.* and 1850, p. 251.

B. 8. D. $\frac{6}{11}$. A. $\frac{2}{6}$. P. 15. V. 1/7. L. lat. 25. L. transv. 7.

The greatest depth of the body, below the origin of the dorsal fin, equals the depth below the occiput, and is rather more than one-fourth of the total length (without caudal); the length of the head being one-third. The head is but little compressed, but higher than broad, and longer than high; the snout is very obtuse, with the lower jaw scarcely projecting beyond the upper; maxillary extending to behind the vertical from the posterior margin of the eye; eye small, its diameter being one-sixth of the length of the head, and two-thirds of that of the snout; crown of the head very convex, divided by ridges (which are angularly bent) into a central rhomboid portion and into a pair of lateral ones: the skin extending from ridge to ridge, and covering the muciferous channels, is finely and longitudinally plaited, and pierced at regular intervals by very small pores. The operculum has a membranaceous margin; the gill-membrane perfectly free from the isthmus, and not united with that of the other side: there are four perfect gills, but the pseudobranchiæ are small. Head entirely scaleless.

The distance between the origin of the dorsal fin and the end of the snout is nearly equal to that between the dorsal and caudal fins; its spines are very feeble, gradually increasing in length behind. the second soft ray being the longest, but much shorter than the base of the fin. The anal fin is small, with the spines very feeble; and there are not more than two in the specimen from which this description is taken, whilst Mr. Lowe says that he has found four spines in the first specimen which was discovered. The base of the anal fin is covered with rather large scales. Caudal fin small, forked, covered with scales at the base; pectoral falciform, not quite as long as the head, and not extending on to the vent; ventrals much shorter, with the spine very feeble. The scales are large, especially on the trunk, with the margin irregularly notched; they become smaller on the tail; but the thoracic region is covered with very large ones, especially one between the ventrals being not much smaller than the operculum. Lateral line none.

Colour entirely black.

Madeira.

a. From the Collection of the Rev. R. T. Lowe.

	lines.
Total length	41
Height of the body	9½
Length of the head	11½
Least depth of the tail	3½
Diameter of the eye	1½

The first specimen discovered of this species has unfortunately perished, and this second example is the only one which has been found since: both were obtained at a place called Magdalena. The affinities of this fish are unmistakeably Berycoid, and the nearest genus allied to it is *Beryx*.

Add to p. 370 of Volume IV.:—

The fish described by Johnson as *Chiasmodus niger* belongs to the Gadoid family, in which it may form a separate group characterized by its naked body.

22. CHIASMODUS.

Chiasmodon, *Johnson, Proc. Zool. Soc.* 1863, p. 408.

Body elongate, compressed and tapering posteriorly, naked; belly pendent, its walls being quite membranaceous. Two dorsal fins and one anal; a separate caudal; ventral fins rather narrow, with flat base and several rays. Upper and lower jaw with two series of large pointed teeth, some of the anterior ones being very large and moveable; vomerine teeth none; each palatine bone with a series of teeth similar to those on the palate. Chin without barbel. Branchiostegals eight.

Deep-sea fishes off the Island of Madeira.

1. **Chiasmodus niger.**

Johnson, l. c.

D. 11 | 28. A. 27. P. 13. V. 5.

Head rather compressed, elongate, with the crown flat; its length is two-sevenths of the total (without caudal); its depth is rather less than one-half of its own length; the cleft of the mouth is exceedingly wide, the maxillary extending backwards to the angle of the præoperculum; the lower jaw is somewhat longer than the upper, and both are armed with long, pointed, widely-set teeth, nearly all of which are moveable and can be laid backwards or inwards; the two anterior teeth of the upper jaw are very long, and cross each other when in rest; the three anterior pairs of the lower jaw are likewise prolonged, the third pair being the longest; also the palatine has a longer tooth in front, but this is fixed and not moveable. The eye is of moderate size, two-ninths of the length of the head, rather shorter than the snout, and equal to the width of the interorbital space; it is situated above the anterior half of the maxillary bone. The hind limb of the præoperculum descends backwards in so oblique a line as to be nearly parallel to the scapulary. Gill-opening exceedingly wide, the gill-membranes being joined to the isthmus for a short distance only; pseudobranchiæ none; gills four, narrow.

The body and tail are low, but the abdomen is very extensible and pendent. Lateral line distinct as a longitudinal groove. The first dorsal fin commences above the humerus and is composed of very delicate rays; the length of its base is contained twice and one-third in that of the second dorsal; the anterior rays of the second dorsal are well developed, whilst the posterior are very feeble. The anal fin commences behind the second dorsal; the anterior part of it, which is composed of the strongest rays, is inserted in the abdominal membrane, without being in any connexion with the vertebral column; the posterior part, which is inserted between the muscles of the tail, is composed of feeble rays only. Caudal forked, more than half as long as the head; pectoral as long as the head (without snout); ventral only half as long as the pectoral, inserted below the root of the latter fin.

Entirely black.

Madeira.

a. Type of the species. Presented by J. Y. Johnson, Esq.
b. Two inches and three-quarters long; taken at a depth of 312 fathoms. From the Collection of the Rev. R. T. Lowe.

	lines.
Total length	43
Length of the head	$10\frac{1}{2}$
Depth of the head	$4\frac{1}{2}$
Diameter of the eye	$2\frac{2}{3}$
Length of the upper jaw	8

These two are the only specimens of this species which have ever been discovered. Mr. Lowe obtained his at Magdalena as far back as the year 1850, but omitted to give a description of it. The second specimen was obtained by Mr. Johnson in the course of last year, who, recognizing in it the type of a new genus, gave a very detailed account of it, without assigning to it its place in the system. He appears to have overlooked a part of the fin-rays, the posterior of which are very small, and easily escape observation.

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